60th Annual Texas Chapter of The Wildlife Society Meeting

"Thinking Like a Draba"

Houston, TX

February 21-23, 2024

2023-2024 Executive Board

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Program

Levi Heffelfinger, Sam Harryman, Olivia Gray

Local Arrangements

Hope Zubek and Mikaela Egbert

Student Activities & Posters

Heather Mathewson and Molly Koeck

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Wednesday, February 21, 2024

Time	Event	Location
8:00 AM - 5:00 PM	Exhibitors	Greenway Ballroom
8:00 AM - 5:00 PM	Presentation Practice	Heights
8:00 AM - 5:00 PM	Teer Leadership	Apollo Board Room
8:00 AM - 3:00 PM	Trapping Matters Workshop	Post Oak Ballroom C
8:00 AM - 4:00 PM	Student Poster Set-up	The Landing
8:00 AM - 11:00 AM	Wildlife Photography Workshop	Post Oak Ballroom E
8:00 AM - 12:00 PM	Student Plant ID Set-up	Museum Park
8:00 AM - 12:00 PM	Wildlife Wisdom Workshop	Post Oak Ballroom G
8:00 AM - 10:00 PM	Raffle & Auction	Post Oak Ballroom D
9:00 AM - 10:30 AM	Turning Sound Into Discovery	Post Oak Ballroom F
9:00 AM - 11:00 AM	CWD Information Workshop	Post Oak Ballroom A
9:00 AM - 12:00 PM	Survey123 For Busy Biologists	Timber Grove
10:00 AM - 12:00 PM	Executive Board Meeting	Westbury
12:00 PM - 5:00 PM	Photography & Art Submissions	Mezzanine
1:00 PM - 2:30 PM	Student Plant ID Competition	Museum Park
1:30 PM - 3:30 PM	TCTWS Business Meeting	Westbury
3:00 PM - 5:00 PM	Quiz Bowl	Constellation Ballroom
3:00 PM - 5:00 PM	Kendra Scott Gives Back Event	Greenway Ballroom
5:00 PM - 6:00 PM	Student Poster Session Judging	The Landing
5:00 PM - 6:00 PM	Student Poster Session	The Landing
5:00 PM - 7:00 PM	BRI/Sull Ross Reception	Timber Grove
5:00 PM - 7:00 PM	TAMU/NRI Reception	Post Oak Ballroom A
6:00 PM - 10:00 PM	President's Reception	Post Oak Prefunction

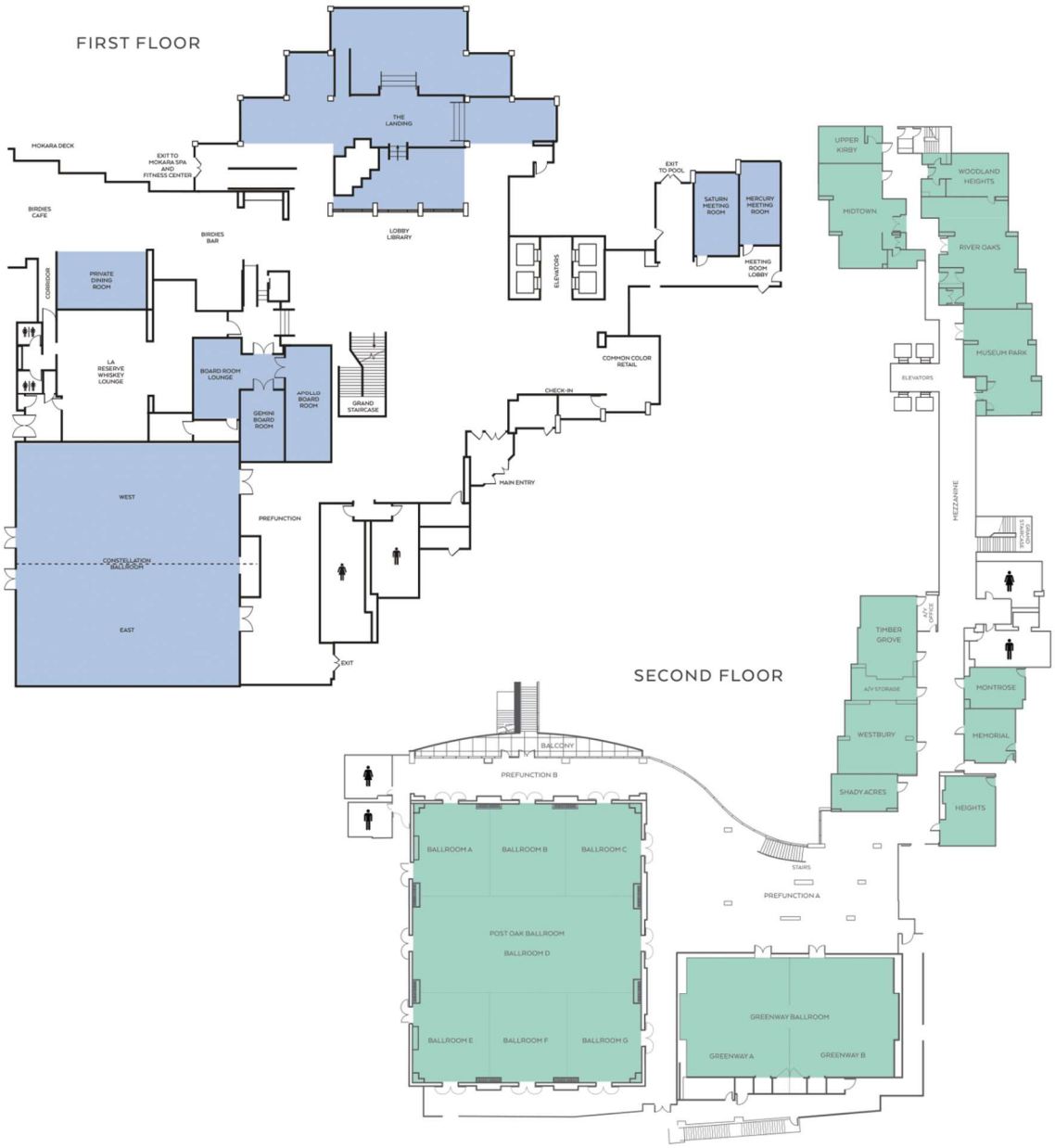
Thursday, February 22, 2024

Time	Event	Location
7:00 AM - 8:00 AM	Student Breakfast	Midtown
7:00 AM - 8:00 AM	Light Breakfast	Constellation Prefunction
8:00 AM - 9:30 AM	Women of Wildlife	Westbury
8:00 AM - 12:00 PM	Photography and Art Set Up	Mezzanine
8:00 AM - 12:00 PM	Professional Plant ID Competition	Museum Park
8:00 AM - 5:00 PM	Exhibitors	Greenway Ballroom
8:00 AM - 5:00 PM	Raffle & Auction	Post Oak Ballroom D
8:00 AM - 5:00 PM	Presentation Practice	Heights
8:00 AM - 5:00 PM	Teer Leadership	Apollo Board Room
8:00 AM - 10:00 AM	Cottam Award Presentations	Constellation Ballroom
10:00 AM - 10:30 AM	Break	Constellation Prefunction
10:00 AM - 10:30 AM	Break	Post Oak Prefunction
10:30 AM - 12:30 PM	Plenary	Constellation Ballroom
12:00 PM - 1:00 PM	Student Poster Removal	The Landing
12:00 PM - 1:00 PM	Professional Poster Set-up	The Landing
12:30 PM - 2:00 PM	Past President's Lunch	River Oaks
12:30 PM - 2:00 PM	Student Chapter Lunch (Invite Only)	Midtown
1:00 PM - 5:00 PM	Photography and Art Voting	Mezzanine
2:00 PM - 5:00 PM	Conservation Affairs Committee Meeting	Westbury
2:00 PM - 3:30 PM	Conservation & Ecology of Birds 1	Post Oak Ballroom B
2:00 PM - 3:30 PM	Conservation & Ecology of Mammals 1	Post Oak Ballroom C
2:00 PM - 3:30 PM	Non-Game Conservation from TPWD	Post Oak Ballroom F
2:00 PM - 3:30 PM	Natural Resources & Habitat Management	Post Oak Ballroom E
3:30 PM - 3:45 PM	Break	Constellation Prefunction
3:30 PM - 3:45 PM	Break	Post Oak Prefunction
3:45 PM - 5:15 PM	Conservation & Ecology of Birds 2	Post Oak Ballroom B
3:45 PM - 5:15 PM	Conservation & Ecology of Birds 3	Post Oak Ballroom F
3:45 PM - 5:15 PM	Conservation & Ecology of Mammals 2	Post Oak Ballroom C
3:45 PM - 5:15 PM	Conservation & Ecology of Mammals 3	Post Oak Ballroom E
5:00 PM - 6:00 PM	Wildlife Conservation Camp Reception	Montrose
5:00 PM - 6:30 PM	Pre Awards Social-Auction and Raffle	Post Oak Prefunction
6:30 PM - 10:00 PM	Awards Ceremony & Reception	Constellation Ballroom
10:00 PM - 10:15 PM	Auction and Raffle Check-out	Post Oak Ballroom D

Friday, February 23, 2024

Time	Event	Location
7:00 AM - 7:30 AM	Fellowship of Christian Conservationists	Westbury
7:30 AM - 9:00 AM	Light Breakfast	Post Oak Prefunction
8:00 AM - 11:00 AM	Professional Poster Session	The Landing
8:00 AM - 11:00 AM	Exhibitors	Greenway Ballroom
8:00 AM - 12:00 PM	Presentation Practice	Heights
8:00 AM - 12:00 PM	Teer Leadership	Apollo Board Room
9:00 AM - 10:30 AM	Conservation and Ecology of Mammals 4	Post Oak Ballroom C
9:00 AM - 10:30 AM	Conservation and Ecology of Reptiles and Amphibians	Post Oak Ballroom F
9:00 AM - 10:30 AM	Conservation of Birds and Mammals	Post Oak Ballroom E
9:00 AM - 10:30 AM	Conservation and Ecology of Birds 4	Post Oak Ballroom B
9:00 AM - 11:00 AM	Executive Board Meeting	Westbury
11:00 AM - 12:00 PM	Professional Poster Removal	The Landing

OMNI HOUSTON HOTEL MEETING SPACE



Plenary - “Thinking like a Draba: Unveiling the Rich Tapestry of Texas’ Natural Biodiversity”

Constellation Ballroom, 10:30 am, Thursday February 22, 2024

Plenary Session Focus: Celebrating the 50th Anniversary of the Endangered Species Act with insights from the James G. Teer Conservation Leadership Institute and invited talks on Texas' rich biodiversity and associated contemporary conservation and management issues, and linkages there-in.

Plenary Session Order

- *10:30 – 10:33:* Speaker: Dr. Blake A. Grisham, President of The Texas Chapter of The Wildlife Society; Topic: Introductions and Welcome

- *10:33 – 11:00:* James G. Teer Conservation Leadership Fellows: Olivia Kost, Ben Olsen, Mitchell Riggs; Title of Presentation: *Thinking like a Jim Teer Fellow: The Past, Present, and Future of the Endangered Species Act*

- *11:00 – 11:15:* Meredith Longoria; Title of Presentation: *Navigating the Crossroads at the Intersection of Research, Applied Management, and the Endangered Species Act in Texas*

- *11:15 – 11:30:* Dr. Scott Longing; Title of Presentation: *Invertebrate Biodiversity in Texas: A Closer Look*

- *11:30 – 11:45:* Dr. Sarah Fritts; Title of Presentation: *The Unintended Consequences of Intelligent Tinkering: Revamping Conservation Strategies for Texas Bats*

- *11:45 – 12:00:* Romey Swanson; Title of Presentation: *Herping Texas: a Photographic Atlas of Texas Herp Diversity*

- *12:00 – 12:15:* Tim Birdsong; Title of Presentation: *Sustaining Freshwater Fish Diversity in a Rapidly Urbanizing Private Lands State*

- *12:15 – 12:30:* Dr. Jeff Goodwin; Title of Presentation: *Regenerative Ranching: Direction Over Perfection*

Plenary Speakers

Olivia Kost
Wildlife Biologist, Texas Parks & Wildlife Department

Olivia Kost serves as the Texas Parks and Wildlife Department biologist and is a current fellow in the James G. Teer Conservation Leadership Institute. Her primary role is to provide technical guidance to landowners and local partners, helping them manage our native wildlife and their habitats. Her passion is to support landscape-scale conservation by engaging with wildlife management associations and cooperatives. She also enjoys leading new landowners in her area as they embark on their land stewardship journey. Olivia earned her bachelor's degree at Texas A&M University and her master's at Texas Tech University while serving as a fellow through the Welder Wildlife Foundation studying avian communities on coastal prairies.

Ben Olsen
Wildlife Health Specialist, Texas Parks & Wildlife Department

Ben Olsen is a Wildlife Health Specialist for Texas Parks and Wildlife Department. He received his B.S. in Wildlife Conservation and Management from Missouri Western State University. Then followed that up with an M.S. in Range and Wildlife Management from Texas A&M University-Kingsville. After graduating, Ben worked as a Wildlife Biologist for the Wisconsin

Department of Natural Resources before joining Texas Parks and Wildlife Department (TPWD). Ben served as a TPWD District Wildlife Biologist in New Braunfels for a few years before promoting to Wildlife Health Specialist. In his current position, he provides advanced consultative services and technical assistance regarding wildlife health with a primary focus on Chronic Wasting Disease. Ben leads a team of seasonal Wildlife Technicians to ensure department deer check stations operate efficiently and disease surveillance goals are met.

Mitchell Riggs
Coordinating Wildlife Biologist-Quail Forever

Mitchell Riggs graduated from Sul Ross State University with a B.S. in Natural Resource Management. Following graduation in 2017, Mitchell interned for a deer breeding facility in Comstock, Wildlife Systems in San Angelo and MT7 Ranch in Breckenridge. In 2018, Mitchell received an opportunity to manage a ranch in Marfa, Texas. The management of this ranch focused on cattle, scaled quail, pronghorn, and mule deer. After leaving Marfa, Mitchell briefly worked for NRCS as a Rangeland Management Specialist in Throckmorton, Texas. This path eventually led Mitchell to Quail Forever. Mitchell focuses on landowner incentive programs, such as EQIP, RCPP-GRIP, PUB, and others. He has developed a passion to keep working lands working, maximining grassland habitats.

Meredith Longoria

Deputy Director of the Wildlife Division, Texas Parks & Wildlife Department

Meredith Longoria currently serves as the Deputy Director for the Wildlife Division at the Texas Parks & Wildlife Department. Meredith has held several positions with TPWD, including Nongame and Rare Species Program Leader, during which time she and her team of subject matter experts played a crucial role in updating the State Threatened and Endangered Species List, guided the implementation of the Texas Conservation Action Plan in coordination with conservation partners, and successfully shepherded several regulations packages adopted by the TPW Commission. Prior to her leadership positions, Meredith served as a Conservation Initiatives Specialist, during which time she worked with partners and colleagues to finalize and enroll the first landowners in the Houston Toad Safe Harbor Agreement and initiated the development of other voluntary conservation programs for private landowners to benefit rare, threatened, and endangered species. Meredith began her career at TPWD as a Wildlife Biologist, providing technical guidance to private landowners in Bastrop and Caldwell Counties. A proud alumna of Texas State University with degrees in Biology and Wildlife Ecology, Meredith exemplifies a deep commitment to wildlife conservation in Texas.

Dr. Scott Longing
Associate Professor of Entomology, Department of Plant and Soil Sciences, Texas Tech University

Scott Longing is an associate professor in the Department of Plant and Soil Sciences at Texas Tech University. He earned a Ph.D. at Virginia Tech University and an M.S. from the University of Arkansas, with both degrees in entomology. Scott's research interests involve invertebrate communities and environmental drivers in southern U.S. ecosystems, where he has worked across the Blue Ridge mountains, Ozarks and Edwards Plateaus, Monahan's Sandhills, and the Texas High Plains. Scott is currently conducting research to advance invertebrate conservation in agricultural landscapes in western Texas, with a focus on native bee specialists. In addition to research, over the past decade Scott has engaged with local urban and rural communities to help improve habitats and local resources for pollinators. Since 2013, Scott has been the supervisor for the Texas Entomology Career Development Event area and state competitions.

Dr. Sarah Fritts
Associate Professor, Biology Department, Texas State University

Dr. Sarah Fritts is an Associate Professor, and first woman wildlife ecologist, in the Biology Department at Texas State University. Dr. Fritts' research program in wildlife ecology focuses on combining innovative field and analytical approaches to find practical solutions that balance the requirements of wildlife with the socio-economic needs of humans. Specifically, she is exploring sustainable land-use practices with a particular focus on renewable energy ecology. Since arriving at Texas State, much of her research has focused on the unintended consequence of bats being killed by wind turbines by exploring ways to decrease fatalities and better understand bat phenology. She has recently been collaborating with the National Renewable Energy Lab, U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and various private energy and consulting companies and has collaborated on wildlife research conducted in Africa, Ecuador, Europe, Malaysian Borneo, across the continental U.S., and Hawai'i.

Romey Swanson
Director, Devil's River Conservancy and Past President, The Texas Chapter of The Wildlife Society

Romey Swanson, a Certified Wildlife Biologist with nearly two decades of dedicated experience in wildlife conservation, is recognized for his impactful contributions within the Texas Hill Country and West Texas Mountains. With a M.S. in Wildlife Ecology from Texas State University, Romey has consistently demonstrated his commitment to land and wildlife conservation through various roles. Romey's serves as the Executive Director of the Devils River Conservancy, where he oversees strategic planning, program development, and community engagement. His earlier roles encompass key positions including Director of Conservation Strategy at Audubon Texas and Conservation Project Manager at Hill Country Conservancy. Romey currently serves as Vice President of the Texas Ornithological Society and Texas Herpetological Society. A notable aspect of Romey's passion for herpetology is his recent Texas Herping Big Year in 2021. Romey's #HerpTX21 passion project led him to discover and document 177 reptile and amphibian species across Texas. This endeavor not only showcased his field expertise but also highlighted his commitment to increasing awareness about the often-misunderstood world of herps.

In addition to his professional roles, Romey is deeply engaged in on-the-ground conservation efforts as a Ranch Biologist for the 1,600-acre Hershey Ranch, focusing management on Hill Country grassland and woodland birds. Collaborating with private landowners in the Davis Mountains and The Nature Conservancy of Texas he is actively involved in cutting-edge research, currently investigating the presence and distribution of rare high-elevation owls in the Davis Mountains. Romey Swanson's multifaceted career, leadership in wildlife organizations, and commitment to field herping make him a respected figure in the Texas conservation community.

Tim Birdsong

Director of Inland Fisheries, Texas Parks & Wildlife Department

Tim's 20-year career in fisheries conservation has emphasized landscape-scale approaches to the restoration and preservation of watersheds, riverscapes, and aquatic ecosystems. He has co-authored more than 50 papers that profile effective case studies in fish conservation, including serving as editor and co-author of the American Fisheries Society book, "*Multispecies and Watershed Approaches to Freshwater Fish Conservation*." In recognition of his contributions to fisheries conservation, Tim received the Fly Fishers International Conservation Award, National Fish Habitat Award, James A. Henshall Warmwater Fisheries Award, and Texas Parks and Wildlife Conservation Award, and he was twice named Outstanding Texas Fisheries Worker of the Year by the American Fisheries Society.

Dr. Jeff Goodwin

Dr. Jeff Goodwin currently serves as Director of the Texas A&M Center for Grazinglands and Ranch Management. The Center focuses on providing applied, ranch-relevant research and education; prioritizing the ecologic and economic resiliency of grazingland resources and ranching operations. Dr. Goodwin has over 23 years of experience working directly with

ranchers and grazingland managers, implementing stewardship focused management and providing innovative solutions to grazingland issues.

Thursday, February 22, 2024

Clarence Cottam Award Presentations
Constellation Ballroom, February 22, 2024
Moderator: Clint Boal

8:00 **Navigating the fragmented thornscrub: using fine-scale movement data to assess disparate responses to fragmentation in a declining galliform**
Katherine Travis; Caleb McKinney; Evan Tanner; Ashley Tanner; David Hewitt; David Wester; Fidel Hernandez; Leonard Brennan; Humberto Perotto-Baldivieso; Ryan Luna; R. Dwayne Elmore; John McLaughlin

8:20 **Science and Policy Behind Plans for Reintroducing Ocelots to Historic Range in Texas**
Lindsay Martinez; Jason Lombardi; Garrett Powers; Amanda Anderson; Israel Parker; Forrest East; Tyler Campbell; Cindy Dohner; Michael Brennan; Roel Lopez

8:40 **Comparing behaviors and demographic outcomes for extant and translocated eastern wild turkeys in east Texas and west-central Louisiana**
Chad Argabright; Rusty Wood; Jason Hardin; Bret Collier

9:00 **Influence of Traffic Volume on the Carnivore Community Composition within the Road Effect Zone**
Thomas Yamashita; David Wester; Zachary Wardle; Daniel Scognamillo; Landon Schofield; Michael Tewes; John Young; Jason Lombardi

9:20 **Pronghorn Susceptibility to Prion Diseases Through PRNP Sequencing**
Angela Patrick; Matthew Buchholz; Warren Conway; Courtney Ramsey; Matthew Johnson

9:40 **Nonbreeding ecology of female northern pintails and links to fitness**
Georgina Eccles; Kevin Kraai; Daniel Collins; Jay VonBank; Jordan Giese; Dale James; Bart Ballard

Conservation and Ecology of Birds 1
Post Oak Ballroom B, February 22, 2024
Moderator: Abe Woodard

2:00 **Evaluating Use of Rangeland Analysis Platform Data to Develop Site-Level Habitat Relationships of Northern Bobwhite**
Alejandro Bazaldua; Fidel Hernandez; Aaron Foley; Kristyn Stewart-Murphy; Sabrina Szeto

2:15 **Assessment of Scaled Quail Habitat Selection and Movement Behavior on an Active Oil and Gas Field in the Permian Basin, Texas**
Brooke Bowman; Ryan Luna; Justin French; Lalo Gonzalez; Evan Tanner; Jesse Wood

2:30 **Exploring Drought-Legacy Effects in Northern Bobwhite in Texas**
John Herschberger; Fidel Hernandez; David Wester; John Edwards; Alejandro Bazaldua; Kristyn Stewart-Murphy

2:45 **Influence of Rainfall on Northern Bobwhite Reproduction**
Lindsey Howard; Fidel Hernandez; Clay Hilton; David Hewitt; David Wester; Michelle Garcia

3:00 **Demographics of Northern Bobwhite Translocated to the Pineywoods Ecoregion of Texas**
Trey Johnson; Bradley Kubecka; C. Brad Dabbert

3:15 **The Influence of Landcover and Weather on Northern Bobwhite Population Growth in Texas**
Kristyn Stewart-Murphy; Fidel Hernandez; Sabrina Szeto; Jon Horne; Alejandra Olivera-Mendez; Angela Guerrero

Conservation and Ecology of Mammals 1

Post Oak Ballroom C, February 22, 2024

Moderator: Levi Heffelfinger

2:00 **Reproductive status limits thermoregulatory behavior in white-tailed deer**

Breanna Green; Evan Tanner; Clay Hilton; Michael Cherry

2:15 **Drivers and Consequences of Mule Deer Site Fidelity in a Highly Dynamic Landscape**

Calvin Ellis; Levi Heffelfinger; David Hewitt; Randy DeYoung; Timothy Fulbright; Louis Harveson; Warren Conway; Shawn Gray; Michael Cherry

2:30 **Thermal drivers and consequences of foraging behavior in white-tailed deer**

Miranda Hopper; Breanna Green; Joseph Hediger; Clay Hilton; David Hewitt; Evan Tanner; Michael Cherry

2:45 **Behavioral state-specific resource selection of pronghorn in the Texas Panhandle**

Marlin Dart; Evan Tanner; Timothy Fulbright; Anthony Opatz; Levi Heffelfinger; David Hewitt; Randy DeYoung; Shawn Gray; Michael Cherry

3:00 **Behavioral State Specific Habitat Selection of Elk in the Trans-Pecos**

Elle Sutherland; Justin French; Lalo Gonzalez; Michael Cherry; Levi Heffelfinger; Shawn Gray; Froylan Hernandez

3:15 **White-tailed Deer Spatial Response to Temporary Bait During Camera Surveys**

Dylan Stewart; Jared Beaver; Lucas Cooksey; Brian Pierce; Roel Lopez; Stephen Webb

Non-Game and Rare Species Conservation from TPWD

Post Oak Ballroom F, February 22, 2024

Moderator: Amanda M. Veals Dutt

2:00 **Ranking and Prioritizing Species for Conservation and Research**
Jonah Evans

2:15 **Collaborative programs that connect landowners and agencies to do conservation for federally listed and candidate species on private lands**
Darren Proppe

2:30 **Non-game Mammal Conservation in Texas**
Dana Karelus

2:45 **Use of Electric Fencing to Deter Bears from Attractants in an Arid Landscape**
Rachael Connally; Austin Bohannon; Krysta Demere; Olivia Gray; Michael Janis; Chase McCrory; Julie Myers

3:00 **Historical Changes in The Distribution of Montezuma Quail In Texas (1850-1950)**
Dave Holdermann

3:15 **Monitoring and learning the urban ecosystem with iNaturalist**
Sam Kieschnick

Natural Resources Management/Habitat Management

Post Oak Ballroom E, February 22, 2024

Moderator: Lalo Gonzalez

2:00 **Responses of Riparian Vegetation Before and After Ashe Juniper Removal**
Zachary Bellows; Heather Mathewson; Darrel Murray

2:15 **Long-term Vegetation Dynamics on a Semi-arid Multiple-use Landscape**
Sarah Turner; William Fox; Brian Pierce

2:30 **Understanding Pollinator Preference and Resource Use for Water Conservation Plantings in North-Central Texas Landscapes**
Addison Singleton; Adam Mitchell; Heather Mathewson

2:45 **The Power of Rocks: Ecohydrology Improvements for Habitat Restoration**
Aaron Ortega-Gonzalez; Justin French; Lalo Gonzalez; Louis Harveson

3:00 **A biologist's review of ESRI field data collecting apps: selecting the best tool for your needs**
Amanda Hackney

3:15 **Updates and Advancements for Ecological Mapping Systems of Texas**
Josef Leachman

Conservation and Ecology of Birds 2
Post Oak Ballroom B, February 22, 2024
Moderator: Kristyn Stewart-Murphy

3:45 **Habitat Loss and the Behavioral Effects on a Female Gray Hawk in the Lower Rio Grande Valley of Texas**
Michael Stewart; Ashley Tanner; Brian Millsap; William Clark

4:00 **Escape Cover Use by Multiple Quail Species in Response to Raptor Predation**
Clint Boal

4:15 **Changes in Avian Community Structure Following Prescribed Thinning of Pinyon-Juniper Woodlands in New Mexico**
ADAM CUPITO; Ariana Rivera; Lucas Schilder; Clint Boal

4:30 **Productivity and Nest Survival of White-Tailed Hawks in South Texas During the 2021-2023 Breeding Season**
Madeleine Barham; Danielle Walkup; Clint Boal

4:45 **American Kestrel Nest Survival and Productivity Across a Decade in the Southern High Plains of Texas**
Sarah Fonville; Clint Boal

5:00 **An Experimental Investigation of the Influence of Green Plant Material in Raptor Nest Microclimate**
Audrey Crawford; Clint Boal

Conservation and Ecology of Birds 3
Post Oak Ballroom F, February 22, 2024
Moderator: Darren Proppe

4:00 **Monitoring Changes in Northern Bobwhite Density over 10 years within a Large-scale Experimental Grazing Study in South Texas**
Andrea Montalvo; Abe Woodard; Jason Sawyer

4:15 **Predicted Habitat Overlap Between Montezuma Quail and Feral Pigs in the Davis Mountains of West Texas**
Maya Vaughn; Justin French; Fidel Hernandez; Ryan Luna

4:30 **Winter Habitat Selection and Movement Behavior of Scaled Quail in the Trans-Pecos, Texas**
Caleb Hughes; Ryan Luna; Lalo Gonzalez; Justin French; Louis Harveson

4:45 **Genetic Structure and Variation of Wild Turkey in Oklahoma**
Michael Barrett; Evan Tanner; Randy DeYoung; Alynn Martin; R. Dwayne Elmore; Colter Chitwood; Craig Davis; Sam Fuhlendorf; Nicolle De Filippo; Cody Griffin

5:00 **Landscape Assessment of Wild Turkey Roosting Habitat and Change in the Texas Rolling Plains**
Marcus Blum; Bret Collier; Byron Buckley; Seth Harju; Jason Hardin; Stephen Webb

Conservation and Ecology of Mammals 2
Post Oak Ballroom C, February 22, 2024
Moderator: Calvin Ellis

3:45 **Seasonality of Competition Potential Between Desert Bighorn and Mule Deer on Elephant Mountain Wildlife Management Area**
Hailey Barton; Lalo Gonzalez; Justin French; Levi Heffelfinger; Froylan Hernandez; Shawn Gray

4:00 **Survival and recruitment of white-tailed deer fawns in South Texas**
Kevin Lovasik; Miranda Hopper; Bryan Spencer; Randy DeYoung; Aaron Foley; Poncho Ortega; David Hewitt; Landon Schofield; Tyler Campbell; Michael Cherry

4:15 **Assessing Temporal Space Use Stability in the Trans-Pecos Black Bear Population**
Matt Hewitt; Amanda M. Veals Dutt; Justin French; Dana Karelus; Louis Harveson

4:30 **Fine-scale behavioral patterns of newly recolonizing black bears in West Texas**
Nicole Dickan; Justin French; Amanda M. Veals Dutt; Louis Harveson

4:45 **Fire as a driver of bobcat occupancy in East Texas**
Parker Trifiletti; L. Mike Conner; Steve Jack; Michael Cherry

5:00 **Understanding the Diet of an Unmanaged Population of Coyotes in Southern Texas**
Anna Racey; Tyler Campbell; John Tomeček

Conservation and Ecology of Mammals 3

Post Oak Ballroom E, February 22, 2024

Moderator: Rachael Connally

3:45 **Monitoring highway mitigation structures for ocelots and bobcats**
Daniel Scognamillo; Thomas Yamashita; John Young; Michael Tewes

4:00 **Development of an Improved Survey Method for the Texas Kangaroo Rat**
Julien Washington; Clint Boal; Derek Malone

4:15 **Small Mammal Population Dynamics Across a Native-Invaded Habitat Gradient**
Duston Duffie; Andrew Mullaney; Cord Eversole; Scott Henke; David Wester

4:30 **Mapping Collared Peccary Habitat: Species Distribution Modeling in the South Texas Plains & Trans-Pecos Ecoregions**
Conner Ties; Ty Werdel; Stephen Webb

4:45 **Morphometrics can be used to estimate body mass and age in wild pigs**
David Pearce; Seth Harju; Stephen Webb

5:00 **Economic Value of White-tailed Deer in Texas**
Jacob Dykes; Shraddha Hegde; Tammi Johnson; Angelica Lopez; Roel Lopez; Alison Lund

Friday, February 23, 2024

Conservation and Ecology of Mammals 4
Post Oak Ballroom C, February 23, 2024
Moderator: Tavin Dotson

9:00 **Relative Efficacy of a Novel GPS Tracking Technology for Monitoring African Lion Movement Behavior.**
Kaileigh Smith; Thomas Schwertner

9:15 **Assessing the occurrence of large carnivores on pastoral landscapes of the Western Kalahari Corridor, Botswana.**
Christopher Mbisana; Thomas Schwertner; Heather Mathewson

9:30 **If you like the leopards, take them all to America: Social drivers affecting human-leopard coexistence in Nepal's mid-hill region**
Rachel Lane; Hemanta Kafley

9:45 **Activity Patterns of Ungulates and Their Associated Predators Within Niokolo Koba National Park in Senegal, West Africa**
Autumn Patterson; Heather Mathewson; Mamadou Kane; Hemanta Kafley; Zachary Farris; Marcella Kelly

10:00 **Small Mammal Community Characteristics and Habitat Use Along an Herbivory Gradient in the Central Kalahari Desert, Botswana**
Thomas Schwertner; Ricky Garibay; Darrel Murray; Kaileigh Smith; Phil Sudman

Conservation and Ecology of Reptiles and Amphibians

Post Oak Ballroom F, February 23, 2024

Moderator: Jason Crosby

9:00 **Snake Captures Decline as a Function of Trap Age: Implications for Monitoring Programs**

Christopher Schalk; Reuber Antoniazzi; Josh Pierce; D. Craig Rudolph

9:15 **Examining variation in environmental variables within Texas tortoise (Gopherus berlandieri) utilization distributions in Cameron County, Texas**

Daniel Guerra; Joseph Veech

9:30 **Texas Tortoise Movement Patterns Following Three Soft Release Periods After Translocation**

Christin Moeller; Saren Perales; Wraith Rodriguez; Scott Henke; David Wester; Sandra Rideout-Hanzak; Cord Eversole; Paul Crump

9:45 **Demography of Alligator Snapping Turtles (Macrochelys temminckii) Along a Fishing Pressure Gradient**

Luke Micek; Christopher Schalk; Cord Eversole; David Stewart; Jessica Glasscock

10:00 **Spatial Ecology of a Secretive Chihuahuan Desert Colubrid**

James Emerson; Dominic DeSantis; Jerry Johnson; Vicente Mata-Silva

10:15 **Comparing the survival of repatriated and wild alligator snapping turtles in eastern Texas**

Connor Adams; Jessica Glasscock; Christopher Schalk

Conservation of Birds and Mammals

Post Oak Ballroom E, February 23, 2024

Moderator: Jonah Evans

9:00 **State of Traditional Ecological Knowledge in the Wildlife Management Profession**
Ty Werdel; David Matarrita-Cascante; Jacob Lucero

9:15 **(CANCELED) Leveraging Citizen Science to Assess the Impact of Drought and Land-Use Change on Northern Bobwhite Population Stability**
Ben Hendrickson; Andrew Gregory

9:30 **Fat Bobwhites: Does Supplemental Feed Maintain Northern Bobwhite Mass Over Winter?**
Aidan Tautges; Abe Woodard

9:45 **Evolution and Outcomes of American Oystercatcher Monitoring Along the Upper Texas Coast**
Rebecca Bracken; Alex Coenen; Susan Heath

10:00 **Cowbird trapping permitting review**
Scott Summers

Conservation and Ecology of Birds 4

Post Oak Ballroom B, February 23, 2024

Moderator: Maya Vaughn

9:15 **Variation in Microplastic Contamination Across Development and Within Brood of Nestling House Sparrows**

Alexander Hoxie; Ty Cosper; Joanna Carballo; Rajani Srinivasan; Britt Heidinger; David Westneat; Adam Mitchell; Michael Butler; Heather Mathewson

9:30 **Parental Attentiveness in House Sparrows Across a Latitudinal Temperature Gradient**

Gracie Gold; Samantha Aguilar; Lindsey Willingham; Gabrielle Names; Britt Heidinger; Heather Mathewson

9:45 **Parental provisioning in house sparrows does not vary across temperature gradients**

Lindsey Willingham; Heather Mathewson; Gabrielle Names; Britt Heidinger; Samuel Lane

10:00 **Exposure of terrestrial birds to microplastic: The effects of ecological traits**

Alexis Baum; Jennifer Smith

Posters

Student Poster Session

The Landing, 5:00-6:00 pm Wednesday, February 21, 2024

1. Impact of Livestock Guardian Dogs, Small Livestock, and Anthropogenic Features on Mesopredator Abundance in the Kalahari Desert

Nancy Montealvo; Christopher Mbisana; Heather Mathewson; Thomas Schwertner

2. Prey Selection and Diet Composition of Mountain Lions (Puma concolor) in South Texas

Shayla Haiflich; Katherine McDaniel; Chloe Nouzille; Michael Cherry; Lisanne Petracca

3. Variations in waterfowl species composition and habitat selection in two ecoregions in north-central Texas

Cameron Starnes; Heather Mathewson; Zachary Bellows

4. Influence of Weather and Urbanization on Coyote Activity across the U.S.

MADISON VASQUEZ

5. A Gut Content Composition Analysis of Four Native Fishes of the Red River.

Gavin Sáenz; Wade Wilson; Jane Rogosch

6. Movements of Feral Cats on the Campus of Abilene Christian University

Ian Massey; Emily Thornock; Avy Langston; James Carpenter

7. The Northern Bobwhite Decline in Texas: is Habitat Loss Truly to Blame?

Abby Balson; Jackson Baack; Kristyn Stewart-Murphy; Fidel Hernandez

8. Trends in raptor admissions to wildlife rehabilitation centers across 13 years in the southern Hight plains of Texas
Mackenzie Hall; Clint Boal

9. Interactions Between Collared Peccaries and Feral Hogs on a Southern Gulf Coast Rangeland
Laken Mize; Cord Eversole; Duston Duffie; Scott Henke

10. An Assessment of the Impact of Aoudad on Palatable Shrubs at the Fort Davis National Historic Site, TX
Eliana Dykehouse; Justin French; Lalo Gonzalez; Louis Harveson

11. How You Measure Matters: Understanding the Scale at Which Bobwhites Respond to Habitat and Rainfall
Jackson Baack; Abby Balson; Kristyn Stewart-Murphy; Fidel Hernandez

12. Anthropogenic and Climate Effects on Striped Skunk Observations via Game Camera
Adriana Puzon; Sarah Fritts; MADISON VASQUEZ; Sarah Barnes

13. Scaled Quail Food Preference in West Texas
Charles Pouland; Dean Wiemers; Daniel Tidwell; Robert Zaiglin; Eric Grahmann; Roel Lopez; Bryson Wall

14. Bushbuck Distribution in Niokolo Koba Park, in Senegal, West Africa
Grace Soechting; Autumn Patterson; Hemanta Kafley; Mamadou Kane; Marcella Kelly; Zachary Farris; Heather Mathewson

15. Advancements in Population Monitoring: Evaluating Space to Event Models for White-Tailed Deer Surveys in Rangeland Ecosystems
Javier Robledo; Aaron Foley

16. Wildlife Disease Research In Texas: Trends Over The Past Three Decades

Summer Aguilar; Genoveva Ramirez; Carli Rotondi; Jamie Benn; Scott Henke; Alynn Martin

17. Assessing the efficacy of integrating light meters with GPS transmitters for use in wildlife research

Jessica Johnston; Caleb McKinney; Katherine Travis; Evan Tanner; Ashley Tanner; Leonard Brennan; Fidel Hernandez; David Hewitt; David Wester; Humberto Perotto-Baldivieso; Ryan Luna; John McLaughlin

18. Perceptions of livestock owners and herders on lion coexistence in the Kalahari landscape

Sebastian Rogers; Heather Mathewson; Thomas Schwertner; Kaileigh Smith; Otshabile Bahetoleng

19. Effects of Minimizing Soil Disturbance on Restoring Cedar-Elm Encroached Riparian Grasslands

Chloe Delahoussaye; David Johnston; Jeff Breeden

20. Effects of Feral Swine on the Spatial and Temporal Patterns of White-Tailed Deer

Joshua Pawlik; Ricky Garibay; Zachary Bellows; Autumn Patterson; Darrel Murray; Heather Mathewson

21. Using non-invasive technologies to determine species richness and abundance in support of an applied conservation genetics project

Julia De La Cruz; Melissa Karlin

22. Efficacy of Juniper Removal on Plant Communities within Riparian Corridors in the Palo Pinto Mountains Region of Texas

Hunter Jacobson; Zachary Bellows; Darrel Murray; David Johnston; Heather Mathewson

23. Impact of Minimizing Soil Disturbance on Restoring Mesquite Encroached Grasslands

Liliana Navar; Jeff Breeden; David Johnston; Chloe Delahoussaye; Hannah Atkinson

24. Silver Bluestem as a Catalyst for Restoring Juniper Encroached Grasslands

Hannah Atkinson; Jeff Breeden; David Johnston; Chloe Delahoussaye; Liliana Navar

25. Spatial patterns of canid diet and maternal haplotype groups in South Texas

Bianca Ramos; Melissa Karlin

26. Utilization of the Hunt Trap Method to Investigate the Small Mammal Community in an Upland Pine Stand

Leo Montano; Jessica Glasscock; Christopher Schalk; Gage R. Grantham

27. White-Tailed Deer Spatial Ecology in an Agricultural Environment

Kaden Kerbow; Charlie Newberry; Courtney Ramsey; Kevin Mote; Justin Foster; Levi Heffelfinger

28. An Assessment of Bird Building Collisions on the University of Texas at San Antonio's Main Campus

Salma Akhrass; Jackson Kinder; Jaden Monk; Laura Salazar; Abigail Schloemer; Idalia Tarin; Alexis Baum; Jennifer Smith

29. Estimating the proportion of northern pintails available to be surveyed during the annual North American waterfowl breeding survey

Brianna Garza; Joseph McGovern; Kevin Kraai; Daniel Collins; Bart Ballard

30. Spatial and Temporal Responses of Small Cats to the Presence of Big Cat Species in Central Botswana

Will Stephens; Daniel Scognamillo; Michael Tewes

31. Ocelot Dispersion and Guzzler Use on Laguna Atascosa National Wildlife Refuge
Hunter Vasquez; Daniel Scognamillo; Michael Tewes

32. Winter site fidelity of female northern pintails using high-resolution GPS data
Brianna Garza; Joseph McGovern; Kevin Kraai; Daniel Collins; Bart Ballard

33. Endoparasite Occurrence in Sympatric Bighorn Sheep and Aoudad in the Trans-Pecos Region of Texas
Seth Hawke; Courtney Ramsey; Warren Conway

34. Effect of Weather and Urbanization on the Activity of Virginia Opossums in the US
Sarah Barnes; Sarah Fritts; MADISON VASQUEZ; Adriana Puzon

35. Factors Influencing Diets of Wild Pigs
Hallie Halstead; Jeffrey Wiegert; Doug Tolleson; John Tomeček

36. Fire Suppression Chemicals: Use, Effectiveness and Perceptions The Testing of EarthClean TetraKO™
Alli Cottrell; Doug Tolleson

37. Illuminating Painted Bunting breeding season diets at Lewisville Lake Environmental Learning Area using fecal eDNA metabarcoding
Haley Daniels; Alejandra Gage; Lindsey Davis; James Bednarz; Zacchaeus G. Compson

38. Evaluating the effect of origin and super-stocking methods on the genetics of eastern wild turkey
Clarissa Molina; Andrew Gregory

39. Response of female northern pintail to thermal variation during spring migration

Joseph McGovern; Evan Tanner; Clay Hilton; Kevin Kraai; Daniel Collins; Bart Ballard

40. Space Use, Movement, and Survival of Translocated Desert Bighorn Sheep in Sonora, Mexico

Dylan Stewart; E. Alejandro Lozano-Cavazos; Stephen Webb

41. Movement and foraging ecology of south Texas mountain lions (Puma concolor)

Chloe Nouzille; Michael Cherry; Randy DeYoung; Jonah Evans; Dana Karelus; Grant Harris; Levi Heffelfinger; Clay Hilton; Katherine McDaniel; Lisanne Petracca

42. Preliminary Field Data and Proposed Experiments for Evaluating Efficacy and the Detection Limits of Alligator Snapping Turtle (Macrochelys temminckii) Environmental DNA (eDNA)

William Lutterschmidt; Kyra Woytek; Cory Adams; Christopher Schalk; Daniel Saenz

43. Ocelot Reproduction and Kitten Survival in South Texas

Victoria Locke; Ashley Reeves; Evan Tanner; Lisanne Petracca

44. Avian and Vegetation Response to Grassland Restoration in the Texas Cross Timbers Ecoregion

Catalina Berry; Zachary Bellows; Ty Cosper; David Johnston; Darrel Murray; Adam Mitchell; Heather Mathewson

45. Using targeted poisoning of red imported fire ants to improve Texas horned lizard habitat

Kira Gangbin; Rachel Alenius; Madison Upton; Diane Barber; Nathan Rains; Mark Mitchell; Dean Williams

46. Nutritive Value Dynamics and Strategic Supplementation of White-tailed Deer Browse Species in the Southern Cross Timbers and Prairies of Texas

Alex Pearson; Shaelyn Rainey; Caitlyn Cooper-Norris; Nichole Cherry; Jhones Sarturi; James Muir; Aaron Norris

47. Tree Species Identity or Forest Structure: Restoration Implications for Small Mammal Diversity in Southern Pine Forests

Gage R. Grantham; Christopher Schalk; Kathryn R. Kidd; Reuber Antoniazzi; John Willis; Jessica Glasscock

48. Effects of Prescribed Fire on Herbaceous Nearest-Neighbor Relationships

Forrest Fay; Juan Elissetche; Ethan Bennie; Sandra Rideout-Hanzak; David Wester; Weimin Xi

49. Patterns of Microhabitat Use by Texas Tortoises in a Southern Texas Coastal Rangeland

Camryn Kiel; Toby Hibbitts; Sandra Rideout-Hanzak; Evan Tanner; Ashley Tanner; David Wester; Andrea Montalvo

50. Microclimate Influence on Sound Propagation in a Woody-Grassland Mosaic

Laura Beck; Ashley Tanner; Evan Tanner; Darren Proppe; Sam Fuhlendorf

51. Is Detectability of Texas Tortoises Affected by Time of Day or Temperature?

Saren Perales; Christin Moeller; Wraith Rodriguez; Scott Henke; David Wester; Cord Eversole; Sandra Rideout-Hanzak

52. Prevalence and Treatment of Mycoplasma in Texas Tortoises

Christin Moeller; Saren Perales; Wraith Rodriguez; Scott Henke; David Wester; Cord Eversole; Sandra Rideout-Hanzak; Clay Hilton; Paul Crump

53. Linking Soil Moisture with Photosynthetic Activity with Very High-Resolution Imgaery

Kimberly Tanguma; Humberto Perotto; Anthony Falk; Doug Tolleson; Shad Nelson; Maria C Donato-Molina

54. Exploring temporal variability in the scale of effect for a declining ground-nesting bird in an anthropogenically altered landscape.
Caleb McKinney; Katherine Travis; Ashley Tanner; Evan Tanner; Leonard Brennan; Fidel Hernandez; David Hewitt; David Wester; Humberto Perotto-Baldivieso; Ryan Luna; John McLaughlin

55. An Examination of Wildlife Characteristics Related to Risk of Entanglement in Mesh Products
Hannah Abelein; Ty Cosper; Tanna Morquecho; Jie Huang; Fei Wang; Adam Mitchell; Heather Mathewson

56. Estimating Waterfowl Density and Species Richness using Autonomous Recording Units
Emma Weber; Jordan Giese; Rachel Fern; Bart Ballard

57. Understanding Disease Transmission Dynamics in a Multi-felid System
Alexandria Hiott; Alynn Martin; Lisanne Petracca

58. Investigating Patterns of Alligator Nest Site Selection and Nest Depredation by Wild Pigs
Alyssa Freeman; Jonathan Warner; John Tomeček

59. Are Native Grasses Pollinated by Insects?
Ethan Bennie; Sandra Rideout-Hanzak; Anthony Falk; Forrest Fay; Juan Elissetche

60. Owl Community Structure, Resource Partitioning, and Exposure to Second-Generation Anticoagulant Rodenticides.
Amaris Shammaa; Philip Smith; Clint Boal

61. A Passive Integrated Transponder Tag Antenna Array for Tracking Small Mammals

Derek Malone; Clint Boal; Russell Martin; Richard Stevens; Carlos Villalobos

62. Comparative Analysis of Emerging Mayfly Diversity and Abundances and Their Role in Riparian Ecosystem Dynamics within the Upper Llano River Watershed: Implications for Rio Grande Wild Turkey Forage and Riverine Management Strategies

Joseph Richards; Ian Mack; William Stewart; Warren Conway; Annie Farrell; Jason Hardin; Scott Longing; Blake Grisham

63. Insect Communities in Relation to Hydroperiod and Local Habitat in the Upper Llano River Watershed

William Stewart; Scott Longing; Ian Mack; Joseph Richards; Warren Conway; Annie Farrell; Jason Hardin; Blake Grisham

64. Identifying Plant-Pollinator Networks Associated With Grasses in North-Texas

Isabella Szebelledy

65. Greater Sandhill Crane Migratory and Population Connectivity as Indicated by Stable Isotopes and Microsatellites

Haley Ditzenberger; Daniel Collins; Warren Conway; Blake Grisham; M. Cathy Nowak; Justin Russell

66. Assessing Prescribed Burns For Tick Control In Coastal Marsh And Prairie Ecoregion Of Southern Texas

Rachel Walters; Scott Henke; Sandra Rideout-Hanzak; Alynn Martin

67. Changes in landscape structure after wildfire in South Texas

Dakota Moberg; Humberto Perotto-Baldivieso; Evan Tanner; Aaron Foley

68. Community Structure of Freshwater Turtles Along a Fishing Pressure Gradient

Luke Micek; Christopher Schalk; Cord Eversole; David Stewart; Jessica Glasscock

69. Investigating the Impacts of Sustainable Grazing Practices on Spiders in North-Central Texas Rangelands
Nadia Castanon; Adam Mitchell

70. Estimating Site-Specific and Region-Wide Density of an Endangered South Texas Felid Using Spatially Explicit Capture-Recapture
James Helferich; Alynn Martin; Daniel Scognamillo; Randy DeYoung; Lisanne Petracca

71. Density and Habitat Use if Feral Pigs in Palo Pinto
Ricky Garibay; Zachary Bellows; Cameron Starnes; Hemanta Kafley; Heather Mathewson; Darrel Murray

72. Evaporative water loss and thermal preferences among three sympatric water snakes of the Brazos River drainage
Luke Marshall; Dalton Lawing; Jesse Meik; Paul Hampton; Israel Prewitt; Ed Oborny

73. A range-wide hierarchical abundance model for Cagle's map turtle
Sarah Bullard; Isabella Lara; Brooke Beverly; Alexander Murray; Jesse Meik

74. Effect of Chinese Tallow on Amphibian Community Ecology and Species Interaction in East Texas Forest Ecosystems
Caleb Mullins; Cord Eversole; Christopher Schalk; Daniel Saenz

75. Erosion Control Products and Wildlife Entanglement
Ty Cosper; Hannah Abelein; Adam Mitchell; Fei Wang; Jie Huang; Heather Mathewson

76. Informing Recovery: Current Genetic Status of Isolated Ocelot (Leopardus pardalis) Populations in South Texas
Tyler Bostwick; Randy DeYoung; Alynn Martin; Ashley Reeves; Lisanne Petracca

77. An Assessment of Fine Scale Microclimate Conditions in Purple Martin Artificial Housing and its Influence on Productivity
Lauren Spjut; Daniel Greene; Nate Smith; Rachel Clostio; Elizabeth Sigler; Wendy Tori; Laurie Doss; Andrea Montalvo; Abe Woodard; Jim Ray; Joe Siegrist; Blake Grisham

78. Variation of available browse for white-tailed deer and exotics by ecosite in north-central Texas
Alex Pearson; Shaelyn Rainey; Caitlyn Cooper-Norris; Aaron Norris

79. When Nature Calls: Acoustical measures of biodiversity and naturalness in an urban/peri-urban landscape
Miranda Fields; Andrew Gregory

80. Assessment of parasitism and associated pathogen prevalence in free-ranging felid populations in southern Texas
Tiffany Pope; Alynn Martin; Ashley Reeves

81. Evaluating the Effects of Grazing Practices on Forage Production, Nutrition, Diversity, and Soil Moisture in the Marfa Grasslands, Texas
Ty Goodwin; Lalo Gonzalez; Silverio Avila-Sanchez; Justin French

82. New and Old Technologies for Soil Erosion Control: Using Remote Sensing to Monitor the Effectiveness of Trincheras
Gray Hancock; Justin French; Lalo Gonzalez; Kevin Urbanczyk; Silverio Avila-Sanchez

83. Wattles for Water: Comparing Five Restoration Treatments for a Severely Degraded Rangeland in the Northern Chihuahuan Desert
Jason Crosby; Lalo Gonzalez; Justin French; Louis Harveson

84. Prevalence and behavioral impacts of toxoplasmosis in southern Texas white-tailed deer (Odocoileus virginianus)
Kendall Bancroft; Alynn Martin; Randy DeYoung; Aaron Foley; David Hewitt; Clay Hilton; Miranda Hopper; Kevin Lovasik; Poncho Ortega; Jason Sawyer; Landon Schofield; Bryan Spencer; Ashley Tanner; Michael Cherry

85. Examining population dynamics and spatial ecology of a declining population of pronghorn in the southern Great Plains
Marlin Dart; Evan Tanner; Matthew Turnley; Derek Hahn; W. Sue Fairbanks; Colter Chitwood; Robert Lonsinger; Levi Heffelfinger; Randy DeYoung; George Wang; Michael Cherry

86. A Comparison of Survey Methods for the Calculation of the Bird Friendliness Index
James Shugart; Andrew Gregory

87. Guiding Wildlife: Evaluating Wildlife Exit Designs and Sensor Lights for Safer Highways in South Texas
Rupesh Maharjan; Kevin Ryer; John Young; Richard Kline

88. Avian Community Response to Removal of Encroaching Woody Vegetation in Trans-Pecos Grasslands
Audrey Taulli; Lalo Gonzalez; Justin French; Maureen Frank

89. Restoration of Native Vegetation in Areas Invaded by Lehmann´s Love Grass
Andres Solorio; Lalo Gonzalez; Justin French; Louis Harveson; Silverio J. Ávila

90. Livestock Tanks for Migratory and Wintering Grassland Birds in the Trans-Pecos
Emily Blumentritt; Justin French; Daniel Collins; Maureen Frank

91. Movement ecology, dispersal, and genetic relatedness of mountain lions (Puma concolor), in south Texas and Mexico
Katherine McDaniel; Michael Cherry; Randy DeYoung; Jonah Evans; Grant Harris; Levi Heffelfinger; Clay Hilton; Dana Karelus; Chloe Nouzille; Lisanne Petracca

92. Concrete Jungles and Carnivorous Residents: A Multifaceted Exploration of Mesocarnivore Dynamics in Urban Greenspaces
Issabella Serrani Gallego; Andrew Gregory

93. Demographic Analyses Suggests Lewisville Population of Painted Buntings is a Demographic Sink
Alejandra Gage; Andrew Gregory; James Bednarz

94. Evaluating Wildlife Diversity Responses to Pine Plantation Age Structure Using a Multi-taxa Survey
Ethan Menzel; Cord Eversole; Kathryn R. Kidd; Jessica Glasscock; Reuber Antoniazzi

95. Space Use of Sympatric Aoudad and Mule Deer in the Trans-Pecos
Andrew Dotray; Lalo Gonzalez; Levi Heffelfinger; Froylan Hernandez; Shawn Gray; Justin French

96. Species-Specific Patterns of Consumption of Oral Rabies Vaccine Baits in the South Texas Plains
Haley Sloan; John Tomeček; Tyler Campbell

Professional Poster Session

The Landing, 8:00-11:00 am Friday, February 23, 2024

1. Movement Patterns, Home Range, and Microhabitat Use of Alligator Snapping Turtles in a Small East Texas Stream

Christopher Schalk; Connor Adams; Sophia Gartenstein; Josh Pierce; Jessica Glasscock

2. Activity patterns of a reintroduced population of Louisiana Pinesnakes across multiple temporal scales

Josh Pierce; Christopher Schalk; Emlyn Smith

3. King Ranch Bluestem Expansion on Small Prairies in Southeastern Texas from 2012 to 2023

Richard Schaefer; Josh Pierce

4. Piping Plover winter site fidelity along the Upper Texas Coast

Taylor Bennett; Rebecca Bracken

5. Effects of Range Management on the Plateau Spot-tailed Earless Lizard, Year 2 Results

Kathryn Steffen; Danielle Walkup; Mycha Van Allen; Eden Fielder; Corey Fielder; Teresa Kenny; Toby Hibbitts; Doug Tolleson; Roel Lopez; Paul Crump; Wade Ryberg

6. Camera-Trap Basking Arrays Detect Western Chicken Turtles in Dynamic Ephemeral Wetland Mosaics

Wade Ryberg; Brandon Bowers; Corey Fielder; Danielle Walkup; Mickey Parker; Toby Hibbitts; Roel Lopez; Paul Crump

7. A Collaborative Approach to Managing and Recovering Wild Houston Toad Populations
Corey Fielder; Toby Hibbitts; Wade Ryberg; Kathryn Steffen; Danielle Walkup; Paul Crump

8. Using Automated Recording Units to Examine the Calling Behavior of the American Woodcock in Eastern Texas
Cory Adams; James Childress; Rusty Plair; Daniel Saenz; Clifford Shackelford; Hope Zubek

9. Marine Debris and Public Outreach: a Dashboard is Worth a Thousand Words
Jess Lucas; Amanda Hackney

10. How Do Ethnicity and Gender Affect Students Choosing Careers in Wildlife?
Scott Henke; Sandra Rideout-Hanzak; Fidel Hernandez; Alynn Martin; David Wester; Shuhua Yu

11. A GEM in the Rough? The Grasslands Effectiveness Monitoring (GEM) Protocol as An Integrated and Tiered Approach to Grassland Habitat Treatment Assessment
Rebekah Rylander; Anna Matthews; Daniel Bunting; Michael C. Duniway; James Giocomo; Anna Knight; Adriana Leiva; Robert Perez; Kourtney Stonehouse; Derek Wiley; Don Wilhelm

12. Movement and habitat selection of repatriated and wild alligator snapping turtles in eastern Texas
Connor Adams; Jessica Glasscock; Christopher Schalk

Abstracts: Cottam Awards Competition

8:00: Navigating the fragmented thornscrub: using fine-scale movement data to assess disparate responses to fragmentation in a declining galliform

Katherine Travis, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Caleb McKinney, Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Leonard Brennan, Kingsville, TX, USA
Humberto Perotto-Baldivieso, Texas A&M University - College Station, College Station, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
R. Dwayne Elmore, Tall Timbers Research, Inc., Tallahassee, FL, USA
John McLaughlin, Lubbock, TX, USA

Abstract: Anthropogenic impacts force organisms to function in novel ways, and species must either alter their behavior or disperse away from these pressures to persist. In South Texas, Tamaulipan thornscrub has been subject to widespread degradation and fragmentation as a result of brush management practices such as brush removal. The chestnut-bellied scaled quail (Callipepla squamata castanogastris; hereafter “scaled quail”) is a declining, ground-nesting bird that is uniquely dependent upon the Tamaulipan thornscrub. By studying the fine-scale movement patterns of scaled quail, we may better understand how brush management practices are affecting the functionality of Tamaulipan thornscrub. From February 2022 to August 2023, we fit 129 scaled quail with GPS transmitters that recorded locations every four

hours at ranches in Duval and Dimmit County, Texas, USA, representing areas of declining and stable populations, respectively. Landscape variables (i.e., road density, oil/gas development, and vegetation structure/landcover) were included in integrated step selection functions to examine how multiple mechanisms of brush removal influenced spatial responses of scaled quail across spatiotemporal scales (four-hour and twelve-hour temporal grains). Across both study sites and temporal grains, selection for thornscrub and avoidance of sandy mesquite shrublands and grasslands was evident, though disparate responses (avoidance or selection) to landscape variables (i.e., total core area of habitat) and anthropogenic features existed across different spatiotemporal scales. Our results highlight the complexity of spatial responses to thornscrub fragmentation, which are context-specific. Accounting for disparity in responses can better inform larger connectivity models focused on managing metapopulation dynamics.

8:20: Science and Policy Behind Plans for Reintroducing Ocelots to Historic Range in Texas

Lindsay Martinez, East Foundation, Weslaco, TX, USA
Jason Lombardi, Kingsville, TX, USA
Garrett Powers, Texas A&M University Natural Resources Institute, College Station, TX, USA
Amanda Anderson, College Station, TX, USA
Israel Parker, Texas A&M University Natural Resources Institute, 77840, TX, USA
Forrest East, Texas A&M University Natural Resources Institute, College Station, TX, USA
Tyler Campbell, East Foundation, San Antonio, TX, USA
Cindy Dohner, Cindy K. Dohner, LLC, Destin, FL, USA
Michael Brennan, Texas A&M University Natural Resources Institute, College Station, TX, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA

Abstract: In 2021, a new collaboration was established to re-energize recovery efforts for endangered ocelots (Leopardus pardalis pardalis) in Southern Texas. The focus was to develop plans to reintroduce an additional ocelot population to a part of the cat's historic, but now unoccupied, range in Texas. To support reintroduction planning, our objectives were to identify a reintroduction site, model ocelot reintroduction at the site, write plans for breeding and reintroducing ocelots, and create a policy proposal for ocelot reintroduction that would address private landowners' concerns about expanding the range of a federally protected species. First, we developed a geospatial habitat suitability assessment that identified a suitable reintroduction site in South Texas based on a suite of ecological and socio-political factors. We then used population viability analyses to build a demographic model of ocelot reintroduction at the selected site and compare possible release strategies. We found that ocelot releases must be implemented long-term to establish a viable population. We used information from these scientific analyses to develop protocols for implementing the reintroduction program. Finally, we integrated all information into a proposed Programmatic Safe Harbor Agreement that will support ocelot recovery while also protecting the interests of private landowners whose lands are necessary for ocelot reintroduction. Our study provides the scientific and policy framework for plans for ocelot reintroduction. It has also shown how universities, agencies, conservation

organizations, and landowners can work together to design innovative plans for conserving endangered species on private lands.

8:40: Comparing behaviors and demographic outcomes for extant and translocated eastern wild turkeys in east Texas and west-central Louisiana

Chad Argabright, Louisiana State University, Baton Rouge, LA, USA
Rusty Wood, Texas Parks & Wildlife Department, Nacogdoches, TX, USA
Jason Hardin, Texas Parks & Wildlife Department, Austin, TX, USA
Bret Collier, Louisiana State University, Baton Rouge, LA, USA

Abstract: Abundance of eastern wild turkeys (Meleagris gallopavo silvestris) in east Texas has been unstable at best, leading to ongoing restoration efforts. Our objective was to evaluate behavioral decisions and subsequent demographic outcomes by comparing translocated and extant eastern wild turkeys across east Texas and west-central Louisiana. GPS data was collected from 222 extant adult females (nTX = 25, nLA = 197) and 45 translocated adult females only in east Texas. Translocated females had lower nest success ($\bar{x}$extant = 0.14; $\bar{x}$translocated = 0.08), produced less nests per potential hen ($\bar{x}$extant = 1.37; $\bar{x}$translocated = 1.13), and had worse annual survival than extant females ($\bar{x}$extant = 0.75; $\bar{x}$translocated = 0.65). Extant females in Louisiana and Texas had similar nest success ($\bar{x}$TX = 0.14; $\bar{x}$LA = 0.14) but varied in nests/potential female ($\bar{x}$TX = 1.72; $\bar{x}$LA = 1.32) and annual survival ($\bar{x}$TX = 0.66; $\bar{x}$LA = 0.76). Prospecting for mates and resources should be done in the first nest pre-laying period, where we saw the biggest behavioral differences between translocated and extant females. Range size was double ($\bar{x}$extant = 521 ha; $\bar{x}$translocated = 1090 ha) and the probability of sharing space was much less likely (Probextant = 0.70; Probtranslocated = 0.54) for translocated adult females. These pre-laying behavioral differences are due to a lack of landscape familiarity for translocated females, which lead to direct demographic consequences tied to finding mates, identifying resources, and avoiding predators. These behavioral differences are likely the driving force behind the depressed demographic outcomes for translocated eastern wild turkeys.

9:00: Influence of Traffic Volume on the Carnivore Community Composition within the Road Effect Zone

Thomas Yamashita, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Zachary Wardle, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Daniel Scognamillo, Kingsville, TX, USA
Landon Schofield, East Foundation, Kingsville, TX, USA
Michael Tewes, Texas A&M University - Kingsville, Kingsville, TX, USA
John Young, Texas Department of Transportation, Austin, TX, USA
Jason Lombardi, Kingsville, TX, USA

Abstract: Disturbance from vehicle noise and human activity extends into nearby habitat, creating a road effect zone characterized by changes in the wildlife community structure and species' behavior. This can impact conservation efforts along roads, such as wildlife crossing construction. To ensure that conservation efforts are effective, we must understand how mammals use road areas. We set camera traps along a low-traffic highway on the East Foundation's El Sauz Ranch in Willacy County and a high-traffic highway on the Hacienda Yturria Ranch in Kenedy County from May 2022 to April 2023. We set camera traps using a randomized block design with transects set perpendicular to the highway. Seven camera traps were set in each of seven transects, at 200 m intervals, starting 50 m from the highway. We assessed how traffic volume and distance from highway affected the mammal community composition. We detected nearly all known mammal species larger than rodents (n=24), including all known carnivores (n=10). The mammal community showed differences in community structure near the low-volume highway, near the high-volume highway, and far from both highways. Community composition was more variable around the high-volume highway than the low-volume highway. Our study provides information on how mammals use road effect zones and how vehicle traffic impacts use. By comparing a low-traffic highway to a high-traffic highway, we provide information to landowners and the Texas Department of Transportation about how traffic volume could impact management practices on working lands around highways and future conservation efforts for mammals living around roads.

9:20: Pronghorn Susceptibility to Prion Diseases Through PRNP Sequencing

Angela Patrick, Texas Tech University, Lubbock, TX, USA
Matthew Buchholz, Michigan State University, East Lansing, MI, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA
Courtney Ramsey, Texas Tech University, Lubbock, TX, USA
Matthew Johnson, Texas Tech University, Lubbock, TX, USA

Abstract: Prion diseases such as Chronic Wasting Disease (CWD) are a concern to wildlife managers, public health officials, and the public. Given the complexity of prion transmission, and history of spontaneous generation of novel prion diseases, the possibility of interfamilial transmission has become a concern. Pronghorn (Antilocapra americana) utilize similar habitat as susceptible Cervids and occur within the endemic CWD area of Colorado and Wyoming. However, no published literature specifically on pronghorn susceptibility to prion diseases including CWD exists, as they have been assumed to be resistant. In Texas, pronghorn occur in portions of both the Texas Panhandle and the Trans-Pecos regions, which both contain Texas Parks and Wildlife Department CWD surveillance zones. Our goal was to sequence the prion protein gene, PRNP, exon 3 in pronghorn from Texas and New Mexico to compare to amino acid sequences of known susceptible Cervids and assess if pronghorn could be susceptible to prion diseases. We amplified and sequenced PRNP from 47 individuals from Texas (including intra-state translocated individuals) and 28 individuals from New Mexico using standard PCR techniques. Phylogenetic analyses were utilized to compare alignment of PRNP in pronghorn to that of known, prion disease-susceptible ruminants. Our research identified that

pronghorn have one additional octapeptide repeat, for a total of 6, rather than the 5 peptide repeats present in Cervids. Additionally, pronghorn share similarities to Cervid genotypes characterized by codons 95, 96, 116, 132, 225 and 226, indicating that pronghorn possess all the amino acids correlated with greater susceptibility to prion diseases in

9:40: Nonbreeding ecology of female northern pintails and links to fitness

Georgina Eccles, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA
Kevin Kraai, Texas Parks & Wildlife Department, Canyon, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Jay VonBank, U.S. Geological Survey, Jamestown, ND, USA
Jordan Giese, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Dale James, Welder Wildlife Foundation, Sinton, TX, USA
Bart Ballard, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: The northern pintail (Anas acuta; hereafter pintail) remains below population objectives and investigating nonbreeding ecology may untangle some uncertainties of nonbreeding conditions influencing fitness. Our objectives were to investigate winter landscape structure on pintail energy expenditure, and to assess the efficacy of winter wetland management on spring migration performance. Female pintails were captured in different wintering regions in the US and fitted with tracking devices. In objective one, we calculated daily home ranges for each pintail during winter, calculated daily step-lengths (km), and daily Overall Dynamic Body Acceleration (ODBA, a proxy for energy expenditure). Land-cover datasets were reclassified into either water, development, grasslands/pasture, or cultivated grains. We calculated several FRAGSTATS metrics. We conducted Generalized Linear Mixed Models (GLMMs), with landscape metrics as predictors and daily ODBA and daily step-lengths the responses. We found increasing water decreased step-lengths and increasing grassland/pasture increased ODBA and step-lengths in pintails. In objective two, we calculated the proportion of GPS locations on both managed and non-managed sites for each pintail. We calculated four spring migration metrics: departure date from wintering area, number of migratory stopovers, total migration duration, and arrival date to breeding areas. Using GLMMs, we regressed spring migration metrics on proportional use of managed sites. Greater proportional use on managed sites resulted in a significantly earlier departure from wintering areas and earlier arrival on breeding areas. We show wetland management allows pintails to arrive on breeding areas sooner and our findings are expected to help resource managers optimally place sanctuaries within landscapes.

Abstracts: General Sessions

Conservation and Ecology of Birds 1

2:00: Evaluating Use of Rangeland Analysis Platform Data to Develop Site-Level Habitat Relationships of Northern Bobwhite

Alejandro Bazaldua, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Aaron Foley, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kristyn Stewart-Murphy, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Sinton, TX, USA
Sabrina Szeto, Sabrina Szeto Consulting, Isen, GER

Abstract: Remotely sensed imagery has been increasing and becoming readily available for managers to use in management. The Rangeland Analysis Platform (RAP) is a publicly available resource that provides estimates of biomass production and percentages of cover for various plant functional groups. The objective of our research was to evaluate the feasibility of using RAP data to quantify habitat-relative abundance relationships for northern bobwhites (Colinus virginianus). We conducted quail roadside surveys on 13 sites (n = 1–5 routes/site, n = 28 total routes) across South Texas during August–September 2022 to estimate mean bobwhite relative abundance (no. of bobwhite/km). We buffered survey routes 400 m on both sides and obtained habitat data (annual forb and grass cover, perennial forb and grass cover, bare ground, litter cover, shrub cover, and tree cover) from RAP, and annual and seasonal precipitation from PRISM. We used a generalized linear model to evaluate the influence of habitat or precipitation on bobwhite relative abundance. We documented a negative response with litter cover (pseudo r2 = 0.13) but a positive response with perennial forb and grass cover (pseudo r2 = 0.19). In addition, bobwhite relative abundance was positively related with annual precipitation (pseudo r2 = 0.39). These findings are in line with ecological expectations and provide evidence that RAP may be a useful resource in bobwhite research and management. Our results suggest that managers may be able to minimize bobwhite population lows during low annual precipitation by managing for perennial forb and grass communities with low litter cover.

2:15: Assessment of Scaled Quail Habitat Selection and Movement Behavior on an Active Oil and Gas Field in the Permian Basin, Texas

Brooke Bowman, Borderlands Research Institute, Sul Ross State University, Alpine, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Jesse Wood, Midland, TX, USA

Abstract: Oil and gas development influences wildlife through various factors across space, species, and ecoregions. Research highlighting how oil/gas development affects the already declining scaled quail (Callipepla squamata) populations of Texas remains understudied, especially in the Permian Basin region. We sought to evaluate how scaled quail habitat selection and movement behavior are affected by oil and gas development and supplemental quail feeders in the Permian Basin of West Texas, USA. Additionally, we were interested in habitat selection and movement behavior variation across seasons. We used integrated step selection analysis to identify which environmental and/or anthropogenic factors affected scaled quail habitat selection and/or movement behavior across well pad densities (0.5 pads/km2 and 5 pads/km2). We determined that monthly vegetation greenness, distance to well pads, distance to supplemental feeders, and various movement variables significantly affect scaled quail habitat selection and movement behavior. We then utilized principal component analyses to discern whether differences occurred across intensities and seasons. We found that scaled quail do not select habitat or move differently across well pad densities or seasons. However, their niche expands considerably during the winter months of the non-breeding, covey season. This suggests that scaled quail reduced intraspecific competition as resources decreased through expanding their niche breadth. Furthermore, we identified the existence of diel activity patterns in habitat selection and movement. These results suggest that wildlife managers working with oil companies should continue to focus on land restoration efforts and consider implementing supplemental feeding to manage scaled quail populations.

2:30: Exploring Drought-Legacy Effects in Northern Bobwhite in Texas

John Herschberger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
John Edwards, Cross Timbers Consulting, Edmore, MI, USA
Alejandro Bazaldua, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kristyn Stewart-Murphy, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Sinton, TX, USA

Abstract: Abstract: A drought-legacy effect is a phenomenon whereby current-year responses of an ecosystem are affected by prior-year(s) rainfall. Drought-legacy effects have been documented in grassland ecosystems, but it is unknown whether such legacy effects also influence wildlife dependent on these systems such as grassland-bird species. Northern bobwhite (Colinus virginianus) populations in semiarid rangelands are strongly influenced by rainfall. Thus, it is plausible that bobwhite populations in arid environments are subjected to drought-legacy effects. Our objective was to quantify the relationship between bobwhite abundance and current-year and prior-year Modified Palmer Drought Severity Index (PMDI). Our study focused on bobwhite populations of northern Texas (Rolling Plains and Cross Timbers and Prairies) and southern Texas (Rio Grande Plains and Gulf Prairies and Marshes). We used a long-term dataset (1978–2022) of bobwhite relative abundance collected by Texas

Parks and Wildlife Department (TPWD) using roadside surveys and a corresponding dataset of PMDI to analyze the influence of current- and prior-year PMDI (i.e., drought-legacy effects) on bobwhite abundance in each region. We documented a significant interaction between current-year and prior-year PMDI in northern Texas ($P \leq 0.0001$) and southern Texas ($P = 0.0014$) and thus evidence for a legacy effect. The response of bobwhites to current-year PMDI increased significantly ($P \leq 0.05$) when prior-year PMDI changed from drought (PMDI = -4) to normal (PMDI = 0) to wet (PMDI = 4). Our findings show that a drought-legacy effect exists and influences bobwhite abundance in northern and southern Texas.

2:45: Influence of Rainfall on Northern Bobwhite Reproduction

Lindsey Howard, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Michelle Garcia, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Quail populations in semiarid environments experience drastic fluctuations, which are strongly influenced by rainfall. Despite decades of research, the mechanisms driving this relationship are unknown. While past research has focused on the materialized effects of rainfall, we propose that rainfall itself, or closely associated factors, influence population dynamics by serving as reproductive cues. Rainfall may provide supplemental information that stimulates quail reproduction in sermiarid environments. Our study evaluated rainfall itself a as reproductive cue for northern bobwhite (Colinus virginianus) in semiarid rangelands. During April—August 2023, we housed northern bobwhite hens (n=30 hens) in outdoor aviary cages that were subject to ambient environmental conditions. We collected blood before and after rainfall events to monitor changes in reproductive hormones and recorded eggs daily. We measured reproductive hormone (i.e., luteinizing hormone, LH) concentrations in blood samples using ELISAs and calculated egg-laying rates. We also deployed autonomous recording units at 8 sites (1 unit/site) across South Texas to monitor changes in wild bobwhite calling behavior before, during, and after rainfall events. We used the web application BirdSong to detect wild bobwhite calls in our bioacoustic recordings and calculated calling rates. Here we report changes in bobwhite reproductive behavior (LH, egg laying, and calling rate) as a function of rainfall events and discuss the implication of these findings.

3:00: Demographics of Northern Bobwhite Translocated to the Pineywoods Ecoregion of Texas

Trey Johnson, Texas Tech University, Ponder, TX, USA
Bradley Kubecka, Tall Timbers Research, Inc., Magnolia, TX, USA

C. Brad Dabbert, Texas Tech University, Lubbock, TX, USA

Abstract: Northern bobwhite (Colinus virginianus) have largely disappeared from the Pineywoods of Texas. Restoration of populations has been successful in the southeastern United States following translocation. We radiomarked and translocated 120 bobwhite from Florida to a 3,622-ha area in Polk County, Texas. Sixty bobwhite were translocated in January 2023 and the remainder in March. We monitored bobwhite daily to estimate demographics of the two cohorts. During 6 January to 17 October 2023, cumulative survival was 0.52 (95% CI = 0.39–0.65) and 0.28 (95% CI = 0.17–0.42) for January and March cohorts, respectively. We entered breeding season (April 15) with 54 females (nJanF = 25, nMarF = 29) and 55 males (nJanM = 27, nMarM = 28); the first nest was observed on 9 May and 6 May for January and March cohorts, respectively. We found 74 nests; nest incubation rates were 1.06 nests/female (NRJanF = 0.92, 95% CI = 0.61–1.38, NRMarF = 1.17, 95% CI = 0.84–1.64) and 0.31 nests/male (NRJanM = 0.37, 95% CI = 0.20–0.69, NRMarM = 0.25, 95% CI = 0.19–0.50). Pooled across sexes, nest success was 49% (NSJan = 0.47, 95% CI = 0.31–0.64, NSMar = 0.52, 95% CI = 0.33–0.70). Productivity was 5.09 chicks/female (CRJanF = 5.19, 95% CI = 4.39–6.15, CRMarF = 5.00 chicks/female, 95% CI = 4.25–5.88) and 1.35 chicks/male (CRJanM = 1.22, 95% CI = 0.87–1.72, CRMarM = 1.46, 95% CI = 1.08–1.99). Overall, demographics were comparable to growing populations.

3:15: The Influence of Landcover and Weather on Northern Bobwhite Population Growth in Texas

Kristyn Stewart-Murphy, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Sinton, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Sabrina Szeto, Sabrina Szeto Consulting, Isen, GER
Jon Horne, Idaho Department of Fish and Game, Boise, USA
Alejandra Olivera-Mendez, Colegio de Postgraduados, San Luis Potosi, Salinas de Hidalgo, San Luis Potosi, MEX
Angela Guerrero, Queensland University of Technology, Brisbane, AUS

Abstract: Northern bobwhites (Colinus virginianus) inhabit semi-arid rangelands and open woodlands in the United States, and their populations have been experiencing distribution-wide declines for the past century. Habitat loss and fragmentation have been hypothesized as potential factors driving the population decline at large spatial scales; however, long-term changes in weather (i.e. rain, temperature, and soil moisture) traditionally have not been considered as contributing factors. The objective of our study was to evaluate the hypothesis that habitat loss and long-term weather trends influence bobwhite population growth in northern and southern Texas. We used 2019 National Land Cover Data as well as historical (1978–1992) and projected (1992–2022) land cover data from the United States Geological Survey to assess bobwhite habitat connectivity and configuration. We also used data from the National Centers for Environmental Information to quantify weather within each region using Palmer Modified Drought Index values. Here we report on the influence of habitat amount (%) and weather

(PMDI) on bobwhite population growth and discuss the relative importance of each. Our findings will 1) provide a better understanding of the degree to which fragmentation and weather influence bobwhites in Texas, and 2) help guide species conservation at regional scales.

Conservation and Ecology of Mammals 1

2:00: Reproductive status limits thermoregulatory behavior in white-tailed deer

Breanna Green, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Altering space use and diel activity patterns are animal behaviors that balance energetic needs and thermoregulation. However, reproduction increases energetic requirements and limits thermoregulatory efficiency. We assessed how environmental temperature influenced when and where white-tailed deer (Odocoileus virginianus; hereafter “deer”) foraged and accessed water depending on reproductive status. We monitored activity patterns associated with foraging and drinking at shaded/unshaded feed stations of six pregnant and 11 non-pregnant captive deer using camera traps May through August 2022 in Kingsville, Texas, USA. We measured black body environmental temperature and identified periods of extreme heat (daily mean > average high). We recorded 5,785 foraging and 7,117 drinking events and analyzed the coefficient of activity overlap ($\hat{d}$; range: 0 [no overlap] to 1 [complete overlap]) between pregnant and non-pregnant deer at different environmental temperatures and locations. Drinking activity overlap of pregnant and non-pregnant deer was similar during periods of lower temperatures (daily mean <35°C; $\hat{d}$=0.93, CI:0.90-0.94) and higher temperatures (daily mean >35°C; $\hat{d}$=0.90, CI:0.87-0.93). However, foraging activity overlap of pregnant and non-pregnant deer at lower temperatures was 13% greater ($\hat{d}$=0.90, CI:0.87-0.92) than at higher temperatures ($\hat{d}$=0.77; CI:0.72-0.82). Moreover, diel activity overlap between pregnant and non-pregnant deer at shaded feeders was 7% greater at lower temperatures ($\hat{d}$=0.92, CI: 0.90-0.95) than higher temperatures ($\hat{d}$=0.85, CI: 0.78-0.91), whereas activity overlap at unshaded feeders was 15% greater at lower temperatures ($\hat{d}$=0.91, CI:0.89-0.94) than higher temperatures ($\hat{d}$=0.76, CI:0.68-0.82). Collectively, our results demonstrate pregnancy has strong effects on diel activity patterns, and those effects are most pronounced at high temperatures.

2:15: Drivers and Consequences of Mule Deer Site Fidelity in a Highly Dynamic Landscape

Calvin Ellis, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Randy DeYoung, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Timothy Fulbright, Texas A&M University - Kingsville, Kingsville, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA
Shawn Gray, Texas Parks & Wildlife Department, Alpine, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Site fidelity is observed across taxa and predicted to improve familiarity with the environment and individual or population performance. Human disturbance, however, may alter the benefit of this previously adaptive behavior. We examined site fidelity of 125 GPS-collared mule deer (Odocoileus hemionus) across four populations in the Texas Panhandle from 2015 – 2019. We compared proportional volumetric overlap of utilization distributions for corresponding (i.e., same season across years) and consecutive seasons. We defined seasons as development (May - July), pre-rut (Aug. – Oct.), breeding (Nov. – Jan.), and recovery (Feb. – Apr.). For males, site fidelity across years was greatest during development (0.38 ± 0.17; $\bar{x}$ ± SD.) and lowest during breeding (0.31 ± 0.11). For females, site fidelity across years peaked during recovery (0.52 ± 0.12) and was lowest during pre-rut (0.43 ± 0.17). Site fidelity was greater near water and farther from grasslands. Greater energy development increased site fidelity for females and decreased site fidelity for males. Site fidelity for consecutive seasons was driven by vegetation greenness; where deer reduced site fidelity to exploit greener areas. Site fidelity had sex- and age-specific nutritional consequences. Adult males with greater site fidelity were in better nutritional condition, but for subadult males, nutritional condition decreased with site fidelity. For lactating females, nutritional condition increased with site fidelity, however, for non-lactating females, nutritional condition decreased with site fidelity. Overall, site fidelity was greatest near important resources, decreased to allow the tracking of forage resources, and enhanced the nutritional condition of adult males

2:30: Thermal drivers and consequences of foraging behavior in white-tailed deer

Miranda Hopper, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Breanna Green, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
JOSEPH HEDIGER, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, KINGSVILLE, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Foraging behavior is a key determinant of nutritional condition, which governs individual and population-level performance. Foraging behavior is influenced by numerous factors; however, little is known about the effect of thermal conditions on foraging behavior or the physiological consequences of foraging decisions in environments which experience extreme heat. We investigated how foraging behavior is influenced by environmental temperature and life history characteristics, and how internal temperature is influenced by foraging behavior and environmental temperature. We monitored black-body environmental temperature and internal temperature with temperature-logging vaginal implant transmitters while conducting a cafeteria-style diet study using captive white-tailed deer (Odocoileus virginianus; hereafter: “deer”). From April through September 2022, we monitored intake and diet selection of 35 individuals offered two diets with varying levels of protein and energy. We used generalized linear mixed models to test the effect of reproductive status, age, sex, and environmental temperature on daily intake levels and diet selection. We used linear mixed effects models to evaluate the effect of daily intake, diet selection, and environmental temperature on internal temperature. Deer selected diets with high energy and low protein during gestation and post-parturition, antler growth, and juvenile body growth. Additionally, we observed as environmental temperatures increased, deer reduced overall intake, reduced protein intake, and increased energy intake. Lastly, we found internal temperature increased as protein intake increased, revealing a physiological cost to consuming a high-protein diet. Our results suggest foraging behavior can be strongly influenced by environmental conditions and induces important physiologic responses in environments prone to extreme heat.

2:45: Behavioral state-specific resource selection of pronghorn in the Texas Panhandle

Marlin Dart, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Timothy Fulbright, Texas A&M University - Kingsville, Kingsville, TX, USA
Anthony Opatz, New Mexico Department of Game and Fish, Santa Fe, NM, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Randy DeYoung, Texas A&M-Kingsville CKWRI, Kingsville, TX
Shawn Gray, Texas Parks & Wildlife Department, Alpine, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Pronghorn (Antilocapra americana) are a grassland specialist species that have experienced population declines and range contractions in portions of their distribution as a

result of anthropogenic development and loss of native vegetation communities. Understanding how pronghorn select resources while in different behavioral states can reveal habitat requirements for important but infrequent behaviors. We used hidden Markov modeling to estimate behavioral states—encamped, foraging, and transiting—underlying movement of 72 pronghorn (36 males, 36 females) collared from 2017 – 2019 in the Texas Panhandle. We then conducted step selection analyses to evaluate behavioral state-specific resource selection for slope, distance to road, and distance to three landcover types—herbaceous vegetation, woody vegetation, and cropland. Resource selection differed by behavioral state. Pronghorn spent the most time foraging (65%), and selected areas with shallower slopes farther from roads and woody vegetation. Foraging pronghorn exhibited seasonal variation in selection for herbaceous vegetation, specifically selecting areas closer to herbaceous vegetation during the growing season and farther from herbaceous vegetation during the dormant season. Pronghorn spent the least amount of time encamped (10%), and resource selection generally aligned with selection patterns when foraging. However, when transiting (25%), pronghorn selected areas closer to roads and exhibited seasonal variation in selection for herbaceous vegetation. Our findings provide insight into how rangeland composition and configuration influence resource selection differentially when accounting for pronghorn behavior. Moreover, we highlight that integrating behavioral modes into resource selection can identify critical habitat associations that may be less prevalent but biologically important.

3:00: Behavioral State Specific Habitat Selection of Elk in the Trans-Pecos

Elle Sutherland, Sul Ross, Alpine, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Shawn Gray, Texas Parks & Wildlife Department, Alpine, TX, USA
Froylan Hernandez, Texas Parks & Wildlife Department, Alpine, TX, USA

Abstract: Little is known about elk (Cervus canadensis) populations in the Trans-Pecos region of Texas. Population estimates suggests there could be approximately 3,500 free-ranging individuals. However, there is minimal information on the dynamics of these populations. These knowledge gaps have come into sharp focus with increased concern for chronic wasting disease (CWD) in the Trans-Pecos. Thus, it is essential to understand the epidemiology of CWD such as space use and drivers of movement in CWD susceptible species such as elk. Pilot data collected from the first three GPS-collared elk in the Trans-Pecos (captured March 2023) showed itinerant movement patterns. This instable space use has substantial implications for disease spread. To further investigate this issue, we used Hidden Markov models (HMMs) to segment the movement path into encamped and roaming states, then evaluated environmental drivers of movement in each state using integrated step-selection functions (iSSFs). We found clear signatures of encamped and roaming behaviors in elk movement patterns, with increased probability of encampment near stream beds with green vegetation. Our iSSF analysis revealed

that elk movement routes were influenced by topography and shrub cover. Our top model found that elk in the roaming state selected for landscape concavity (TPI; β = -0.754, SE = 0.0576), avoided rugged terrain (β = -0.495, SE = 0.4572) and a quadratic term suggested preferred elevation between 1200m to 1700m.This study provides a method for elk movement pattern predictions and a basis for future studies to provide insight to CWD transmission pathways in this understudied population.

3:15: White-tailed Deer Spatial Response to Temporary Bait During Camera Surveys

Dylan Stewart, Texas A&M University - College Station, College Station, TX, USA
Jared Beaver, Montana State University, Bozeman, MT, USA
Lucas Cooksey, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Brian Pierce, Texas A&M University Natural Resources Institute, Brenham, TX, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Stephen Webb, Texas A&M University Natural Resources Institute, College Station, TX, USA

Abstract: Researchers commonly estimate white-tailed deer (Odocoileus virginianus) abundance using bait to attract deer to camera stations. Our objective was to quantify whether bait (i.e., whole kernel corn) presence and removal impacted home ranges (i.e., size and overlap) and movement of deer during camera surveys. We conducted our research at Joint Base San Antonio-Camp Bullis in central Texas from 2012 to 2013. We captured and fitted 64 deer (32 male, 32 female) with GPS collars, which collected 1 GPS location every 15 minutes from 22 July to 2 September 2012¬–2013. Baited camera surveys were conducted from 5 to 18 of August annually. We evaluated the effect of bait on diurnal and nocturnal daily range size and overlap of deer using spatial temporal analysis of moving polygons (STAMP). During the bait period at night, male daily range size (149 ha) was 12% larger than pre-bait (133 ha). During the bait period, male daily diurnal range overlap (0.15) was 26% lower compared to pre-bait period (0.20). For females, daily nocturnal range size increased by 21% and overlap decreased by 13% from the pre-bait to bait. Daily distance moved (m) was similar (<6% difference) between the bait and pre-bait period for both sexes. The presence and removal of bait had minimal influence on deer space use. Our results suggest that using bait during camera surveys will have minimal impact on deer daily range characteristics and movement.

Non-Game and Rare Species Conservation from TPWD

2:00: Ranking and Prioritizing Species for Conservation and Research

Jonah Evans, Texas Parks & Wildlife Department, Boerne, TX, USA

Abstract: The Nongame & Rare Species program (NRSP) at Texas Parks & Wildlife conducts research and management on a wide diversity of species. With over 70,000 nongame species in the state, selecting the right species and research questions to focus on is crucial for making meaningful conservation progress with limited resources. Over the past several years, the NRSP has worked to develop new, objective criteria for determining which species are listed as

Species of Greatest Conservation Need and which qualify as State Threatened. The program has also developed a novel strategy for identifying key knowledge gaps that need to be filled for conservation measures to begin and developed a strategy for determining most crucial conservation actions needed to recover imperiled species. In this presentation, we will explore the inner workings of how TPWD rare species biologists are changing how they approach the complex task of species conservation and recovery.

2:15: Collaborative programs that connect landowners and agencies to do conservation for federally listed and candidate species on private lands

Darren Proppe, Texas Parks & Wildlife Department, Dripping Springs, TX, USA

Abstract: When the Endangered Species Act was passed by the U.S. Congress 50 years ago, some viewed the act primarily as a regulatory mechanism, and thus, perceived that interaction with agencies was best to be avoided. In response to this concern, the U.S. Fish and Wildlife Service created several programs that encourage and reward voluntary collaboration and conservation on private lands. Specifically, maintaining or creating populations or habitat for species that are listed as endangered or threatened, or are a candidate for listing, can come with assurances for a landowner. Assurances can include authorizing some level of incidental take and a commitment to 'no surprises' for the landowner should changes to the status or regulations occur for a covered species. The Texas Parks and Wildlife Department has also developed several programmatic agreements that streamline the process for landowners who want to engage in voluntary conservation for federally listed and candidate species on their lands. This presentation will explore current programs that facilitate voluntary conservation actions for listed or candidate species, such as Habitat Conservation Plans, Safe Harbor Agreements, and Candidate Conservation Agreements with Assurances. We will cover the features and best applications for each program, as well as provide several examples of current and ongoing initiatives. The goal of this presentation is to provide landowners, and those who work with landowners, with a stronger understanding of the tools available for the conservation of listed and candidate species on their working lands while also facilitating the continuation of normal operations such as farming, ranching, and recreation.

2:30: Non-game Mammal Conservation in Texas

Dana Karelus, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: Texas Parks and Wildlife Department (TPWD) is charged with ensuring "the continued ability of nongame species of fish and wildlife to perpetuate themselves successfully". As such, the TPWD Mammal Conservation Program focuses on the conservation, research, and management of the non-game mammals and furbearers in Texas. The program covers a wide variety of mammal species, with most attention on those that are federal or state threatened and endangered as well as species of greatest conservation need (SGCN), such as Texas kangaroo rats (Dipodomys elator), black-tailed prairie dogs (Cynomys ludovicianus), Davis mountains cottontails (Sylvilagus robustus), plains spotted skunks (Spilogale interrupta), swift foxes

(Vulpes velox), ocelots (Leopardus pardalis), black bears (Ursus americanus), and mountain lions (Puma concolor). Bats were recently split into their own program due to their unique needs and threats. In this presentation, we will discuss the current efforts underway for the mammals in the program as well as the knowledge gaps and needs that have been identified for priority species. Thus, the ways in which the program works to meet the ultimate goal of supporting sustainable populations of non-game mammals in the state will be examined.

2:45: Use of Electric Fencing to Deter Bears from Attractants in an Arid Landscape

Rachael Connally, Texas Parks & Wildlife Department, Alpine, TX, USA
Austin Bohannon, Texas Parks & Wildlife Department
Krysta Demere, Texas Parks & Wildlife Department
Olivia Gray, Texas Parks & Wildlife Department
Michael Janis, Alpine, TX, USA
Chase McCrory, Sanderson, TX, USA
Julie Myers, Texas Parks & Wildlife Department, Fort Stockton, TX, USA

Abstract: Black bears were extirpated from the Trans-Pecos region of Texas by the 1950s but began recolonizing the region from northern Mexico in the 1980s. This recolonization has led to increasing incidents of human-bear conflict. The prevalence of deer feeders on the Texas landscape creates a unique challenge because of the increased opportunity for human-bear conflict. Two types of deer feeders are common in Texas, free choice deer pellet feeders and spin-cast feeders. Since 2018, Texas Parks and Wildlife staff have been testing the use of electricity to deter bears from feeders. Systems that utilized an earthen ground return for the negative circuit were ineffective in the arid environment despite attempts to improve the grounding system. Using livestock panels to create a metal apron laid in front of an electric fence or underneath an electrified spin-cast feeder for the negative circuit have proven effective. A 7-wire all hot fence (~34 inches tall) with a metal grounding apron successfully deterred bears using energizers rated at 0.15-0.25 output joules. Likewise, electrified spin-cast feeders with a metal grounding apron successfully prevented feeder damage using energizers rated at 0.08-0.20 output joules. A third design entailed adding a single hot wire positioned 2-3 inches above and 2-3 inches inside of an existing hog panel or netwire fence. Using 0.15-0.25 output joule energizers, this design successfully deterred as well. We discuss the efficacy of these designs in securing various black bear attractants in the Trans-Pecos region and other arid landscapes.

3:00: Historical Changes in The Distribution of Montezuma Quail In Texas (1850-1950)

Dave Holdermann, Texas Parks & Wildlife Department, WHITEHOUSE, TX, USA

Abstract: Understanding the history of a species' geographical range is fundamental to establishing context for its present condition and developing realistic approaches to its management and conservation. Unfortunately, there is very little documented information in the published literature about the historical Texas distribution of Montezuma Quail (Cyrtonyx montezumae) a Species of Greatest Conservation Need. Generally, published depictions of

Montezuma Quail distributions are without documentation. I addressed this problem by assembling a database of dated and geo-referenced voucher specimens (n = 54) and occurrence records (n = 136) of Montezuma Quail to assess spatial and temporal patterns of Texas distributions through historical time (1850-1950). Historical records revealed that in 1850 Montezuma Quail occupied a large and diverse landscape encompassing 125,745 km2 across 8 distinct macro-scale terrain-vegetation frameworks. The Texas distribution consisted of 2 units—a mostly contiguous central Texas unit centered on the Edwards Plateau and a highly fragmented Trans-Pecos unit associated with plateaus, cuestas, and rugged desert mountain ranges with ≥1,400 m elevation. The 1850 central Texas and Trans-Pecos distributions covered an estimated 109,320 km2 and 16,425 km2, respectively. Beginning in the 1880s, the central Texas distribution underwent a rapid and dramatic contraction that reduced its former expansive range to 2,399 km2. By the 1930s, Montezuma Quail were reduced to relict populations in parts of several counties along the western end of the southern Balcones Escarpment. In contrast, the Trans-Pecos distribution of Montezuma Quail remained essentially unchanged over the historical period, being extirpated from the Franklin Mountains and possibly some marginal, low elevation areas. The records-based data presented in this paper provide firm evidence of the former robustness and subsequent plight of Montezuma Quail in Texas. I propose that Montezuma Quail need greater conservation effort and give broad recommendations for its future management.

3:15: Monitoring and learning the urban ecosystem with iNaturalist

Sam Kieschnick, Texas Parks & Wildlife Department, Cedar Hill, TX, USA

Abstract: The urban ecosystems in Texas are filled with biodiversity, and one of our challenges as wildlife biologists and nature enthusiasts is to learn about the flora and fauna that make up these cities and towns. In many cases, the urban ecosystems are composed of native, naturalized, and invasive species. To manage these properly, it's important to learn the identifications of all of the components of these areas. One of the most powerful tools that we can use is iNaturalist, a citizen science social network that uses both an automated species identification and a community of naturalists to verify these identifications. Not only does the repetition of observing organisms add valuable data to our knowledge of global biodiversity, but it also aids in the natural resource management of the area. By using iNaturalist regularly, a wildlife biologist and nature enthusiast can generate a substantial knowledge about the entire ecosystem. We will discuss the importance of using this tool and how to gain the most out of regular use, especially in the urban ecosystem.

Natural Resources Management/Habitat Management

2:00: Responses of Riparian Vegetation Before and After Ashe Juniper Removal

Zachary Bellows, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA

Abstract: Woody encroachment of Ashe juniper (Juniperus ashei) is an ongoing problem in many Texas riparian areas. Studies on the responses of ecosystems to removal of Ashe juniper indicate that the response could be specific to heavy disturbance. Our study occurs at a tract of land undergoing restoration in north-central Texas in the Crosstimbers ecoregion (Palo Pinto Mountain State Park; opens to public access 2024). Our objective is to examine the effect of Ashe juniper removal and the subsequent disturbance on riparian vegetation for 3–5 years post-removal. Restoration began in phases in 2020. A contracted company initiated mechanical removal of Ashe juniper from multiple riparian areas. In 2022 we initiated reseeding efforts of herbaceous ground cover following removal. In removal areas, we measure stem counts, canopy cover, and herbaceous cover 1 year prior to removal and 3–5 years post-removal. Our study is a before-after treatment design that we analyze using a two-way nested ANOVA. Preliminary results from phase 1, 2 years post-removal and phase 2, 1-year post-removal suggest slight trends towards wood vegetation recovery, but a potential delayed response by the herbaceous cover due to an increase in litter coverage. In summer 2023, we collected another year of post-treatment data, which will include results from our reseeding efforts. Our results inform immediate restoration activities, such as the decision to initiate reseeding efforts with removal of litter cover, and provide more understanding about community-level responses to Ashe juniper removal.

2:15: Long-term Vegetation Dynamics on a Semi-arid Multiple-use Landscape

Sarah Turner, Texas A&M University Natural Resources Institute, College Station, TX, USA
William Fox, Texas A&M University - College Station, College Station, TX, USA
Brian Pierce, Texas A&M University Natural Resources Institute, Brenham, TX, USA

Abstract: Vegetation-environmental relationships are difficult to discriminate, as are drivers of floral change. Multi-year monitoring of spatially congruent sites can ascertain the direction and cause of floristic shifts. Our objective was to assess long-term vegetation change on a multiple use military installation in eastern New Mexico using ground-sampling techniques. A modified point-intercept method was used to obtain species frequency and foliar height data at 45 plots across 6 sampling periods from 2008 to 2021. We used redundancy analysis and canonical analysis of principal coordinates to assess gradients of floristic change and plot-level spatiotemporal differences. Soil composition and annual microclimate were the drivers of species presence and frequency ($R2 = 0.41$, $p < 0.001$), and plot-level analysis showed minimal cyclic movement but no unidirectional shifts. Plot composition weakly differed across periods with rainfall disparities but were similar between years with comparable microclimate ($R = 0.09$, $p < 0.0001$). Plot composition moderately differed across maneuver areas ($R = 0.36$, $p < 0.0001$) but were not significantly different in maneuver areas with similar soils and land use. Our results indicate that soil characteristics drive presence whereas annual weather patterns influence prevalence, and no permanent state change has occurred across the 13-year time span. Future monitoring efforts should focus on quantifying anthropogenic management activities and their influence on composition shifts. Our study approach can assist land managers using a variety of sampling metrics in assessing site-specific long-term changes in

vegetation composition and validate state-and-transition models currently used by land management agencies.

2:30: Understanding Pollinator Preference and Resource Use for Water Conservation Plantings in North-Central Texas Landscapes

Addison Singleton, Tarleton State University, Stephenville, TX, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Insect pollinators are declining across local and regional scales, with contributing factors including urbanization, intensive agriculture, and climate change. Current climate models suggest increased frequency and severity of drought events in North-Central Texas, which reduces wild floral resources in areas that are already limited by other factors in the landscape. Pollinator syndromes are thought to give a general idea of the types of flowers involved in attracting different pollinators and are based on suites of floral cues and morphologies. Biologists can improve the integrity of ecosystem services provided by pollinators by providing environmentally robust floral resources in anthropogenic landscapes. Understanding pollinator attractiveness to plants is crucial for providing quality floral resources in urban landscapes. The purpose of our study is to understand pollinator preference and resource use associated with drought-tolerant, commercially available landscape perennials and to determine the efficacy of pollinator syndromes in North-Central Texas. We established 4, 8.5 x 14-m plots with 3, 2 x 14-m rows containing 20 perennial plant taxa. We conducted weekly observations from May to November 2022 and recorded pollinator visitors during 60 second observations at each plant. Using bipartite network indices, we found evidence of preference by pollinator groups generally consistent with traditional pollinator syndromes and identified commercially available landscape perennials attractive to pollinator groups. Our findings recommend selecting plant species for pollinator conservation in urban areas where water resources may be limited as well as promoting a suite of robust flowering perennials for consideration in restoration or conservation plantings.

2:45: The Power of Rocks: Ecohydrology Improvements for Habitat Restoration

Aaron Ortega-Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: The decline of scaled quail (Callipepla squamata) populations has been mainly attributed to habitat degradation. Increasing plant diversity and reducing soil erosion could help alleviate habitat challenges. Therefore, we have deployed a holistic strategy to restore riparian habitat within the Chihuahuan Desert by building structures known as “trincheras” (small rock dams) to improve hydrological processes. We expect restoration efforts to increase water

harvest, reduce soil erosion, increase native vegetation, and positively affect soil cover and retention. Restoration efforts began in August of 2021 in a private ranch in Southern Brewster County. To date, we have built 130 trincheras. Of those, 50 have been assessed before and after the rainy seasons of 2022 and 2023 to measure how much soil was retained. We used a Functional Principal Component Analysis to determine how sediments accumulated where trincheras were established. As a result, we found significant accumulation up to and beyond 2m upstream from trincheras. Also, we observed negligible loss of sediments downstream to a distance of 0.5m from the trinchera. Variability in the capture of soil sediments may be related to stream features like slope, soil type, and channel size. This study can guide placement and expectations of ecohydrology improvements, leading to more effective habitat restoration. By increasing soil deposition in riparian areas, trincheras are an effective tool to promote plant production and ground cover in the short term.

3:00: A biologist's review of ESRI field data collecting apps: selecting the best tool for your needs

Amanda Hackney, Black Cat GIS and Biological, Pearland, TX, USA

Abstract: ESRI (maker of ArcGIS products) commands a large share of the GIS market and has produced a variety of apps biologists can use for field data collection. However, it is sometimes difficult to discern the nuances between apps and the license levels needed for each. We discuss the pros/ cons of the following apps: Field Maps, Survey 123, and Quick Capture. Field Maps is a map-centric app that excels at collecting points, lines and polygons quickly, while offering a basemap for navigation. Survey 123 is form-centric, and best to use when extensive amounts of data are being gathered on the fly at each location. Quick Capture is a newer option with buttons to collect data quickly and on the fly with minimal user training and input. We cover the current license levels offered by ESRI and explain what levels are required for creation of maps to use in each app, and if additional licenses are required for data collecting staff. All ESRI apps utilize on board GPS capabilities of the user's device but are improved with the use of an external Bluetooth connected GPS unit. After using all three apps in the field, we believe that Survey 123 is the easiest for a beginner to design and use while still offering versatility. Use of these data collection apps will streamline post processing and reduce user error from mis-entered data. Understanding the options available and the costs required will allow biologists to choose the best setup for their projects and budget.

3:15: Updates and Advancements for Ecological Mapping Systems of Texas

Josef Leachman, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: Ecological Mapping Systems of Texas (EMSTX) consist of a 411 class, land classification map for Texas. Each EMSTX type is uniquely identified based on vegetation community and landcover. As well as, geological influences, landforms, and soil type. Land cover is determined from photo interpretation of satellite imagery in addition to species-specific, ground-collected plot data to distinguish between herbaceous, shrubland, and woodland/forest

types. Ground data collection consists primarily of roadside plots where % cover and dominant species are recorded for trees, shrubs, and herbaceous cover. To further improve EMSTX mapping accuracy, geophysical settings using soil Map Units from the gSSURGO data and LIDAR-derived digital elevation models (DEMs) were introduced. Using 10-meter imagery, rules for the classification of each EMS type followed the format: land cover + abiotic factors = mapped EMS type. In 2014, more than 12,000 spatially specific, ground samples were obtained in support of previous mapping efforts (85% accuracy) and system descriptions. With new efforts already underway, significant improvements are evident in both spatial and thematic resolution, including the high resolution mapping of canyons, mapping forest classes based on height, and assessing fine-scale grassland quality on a regional level. With numerous applications for a statewide update to this dataset, the implications for both TPWD and partners include an improved tool for improved land stewardship, landscape change detection, as well as conservation planning and management efforts.

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3:45: Habitat Loss and the Behavioral Effects on a Female Gray Hawk in the Lower Rio Grande Valley of Texas

Michael Stewart, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Alice, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Brian Millsap, New Mexico State University, Las Cruces, NM, USA
William Clark, Raptours, Harlingen, TX, USA

Abstract: Habitat loss is a major threat to wildlife worldwide. Though we typically associate habitat loss with the degradation of large tracts of suitable space, habitat loss in urban environments can be much more incremental. We tracked an adult female Gray Hawk (Buteo plagiatus) in the Lower Rio Grande Valley of Texas before and after 70% of the trees (7.6 ha) were cleared from her core breeding territory and used a hidden Markov model to infer two behavioral states from her movements. While her overall activity budget between within-patch and exploratory movements was unchanged, she undertook substantially longer exploratory movements after the clearcut. These longer movements likely resulted in higher energetic costs and exposed her to additional anthropogenic threats, such as roads. Road exposure within her territory increased from 7 km to 547 km following the clearcut. Preserving natural areas and enhancing wildlife-friendly features in urban green spaces could facilitate adaptation of species like the Gray Hawk to increasingly urban environments. Our study highlights the behavioral effects of seemingly minor habitat loss on a highly mobile predator; however, impacts could be far more severe in species with limited mobility.

4:00: Escape Cover Use by Multiple Quail Species in Response to Raptor Predation

Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: Habitat management is important for conservation of quail, but predator-specific escape cover use is poorly understood. To better understand this habitat requirement, I collected escape cover use data for Gambel's (Callipepla gambelii), scaled (Callipepla squamata), and Montezuma (Cyrtonyx montezumae) quail pursued by trained falconry hawks during 171 hunting trials in winter 2021-2022 and 2022-2023 in Arizona and New Mexico. Gambel's quail and scaled quail used middens (21.3% and 27.6%, respectively) and rabbit/squirrel holes (14.9% and 12.1%, respectively) for escape similarly. Middens and holes were usually associated with woody shrubs and cactus. Woody shrub cover, however, was the primary escape cover by Gambel's (53.2%) and scaled (29.3) quail and additional holes may have been undetected. Grass was the only escape cover used by Montezuma quail (100%). My data suggests middens and holes are used by Gambel's and scaled quail in 36.2 – 39.7% of successful escapes from raptor predation, but where not used by Montezuma quail. Although untested so far, falconers believe that the same middens and holes are used repeatedly across the season, suggesting quail know where the safe escape covers are within their activity areas. This suggests that midden building rodents and hole burrowing mammals, and the features they construct, are important to consider in a community context when managing for quail habitat. Additional data are being collected for northern bobwhite (Colinus virginianus) during November 2023 – January 2024 and will be included in the final results.

4:15: Changes in Avian Community Structure Following Prescribed Thinning of Pinyon-Juniper Woodlands in New Mexico

ADAM CUPITO, Texas Tech University, Lubbock, TX, USA
Ariana Rivera, Texas Tech University, Lubbock, TX, USA
Lucas Schilder, Texas Tech University, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: Pinyon-juniper woodlands are a vital vegetation community for ecosystem health and biodiversity throughout the western United States. However, woodland stand characteristics have been impacted by historical grazing practices, fire suppression, and climate change, facilitating woody encroachment into landscapes that were predominantly open grassland savannas. In response, large-scale thinning and prescribed burning efforts are underway to restore stand densities and patterns while reducing hazardous fuel loads. However, these efforts must consider potential impacts to both pinyon-juniper obligate and grassland-nesting birds. To develop a better scientific understanding of how avian communities change following common woodland thinning approaches, we have partnered with the US Fish and Wildlife Service and Bureau of Land Management to conduct a long-term avian monitoring study in Lincoln County, New Mexico. We stratified random sampling across gradients of thinning intensities and utilized detection probability survey methods during 2018-2023 to assess changes over time in woodland bird communities associated with specific thinning treatments.

This ongoing collaboration aims to provide key insights into species-specific and ecological community responses to woodland thinning. Ultimately, this research will provide data to facilitate informed policies and management decisions focused on balancing ecological restoration of pinyon-juniper ecosystems with avian conservation priorities on public forest lands.

4:30: Productivity and Nest Survival of White-Tailed Hawks in South Texas During the 2021-2023 Breeding Season

Madeleine Barham, Texas A&M University - College Station, Flower Mound, TX, USA
Danielle Walkup, Texas A&M University - College Station, Bryan, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: The white-tailed hawk (Geranoaetus albicaudatus) is a neotropical bird of prey with a restricted breeding range concentrated in the coastal bend region of Texas. Population estimates and demographics are largely unknown, which pushes the state-threatened listing of this species. Previous estimates of white-tailed hawk nesting success show high spatial and latitudinal variability. More investigation of their breeding ecology and nest success throughout the Gulf Coast of Texas is necessary to expand our current understanding of productivity and inform conservation planning for the species. We observed 80% breeding success from monitoring 40 different white-tailed hawk nests along the coast in south Texas during the 2021 and 2022 breeding seasons. From 40 adult pairs, 0.677 nestlings were produced per breeding attempt, and 0.581 nestlings survived to fledge per breeding attempt. We found that the estimated daily survival rate probability increased in relation to nest height (mean = 3.54 m). The daily nest survival estimate for all nests pooled was 0.9969 (95% CI = 0.9898– 0.9990), which translates to an estimated nest survival of 77.8%. These results are at the high end of previously reported estimates. This could be attributed to the broad spatial distribution of our sample that may conceal any localized patterns of nesting failure, or to the temporal period in which we collected data compared to studies conducted previously. Data collection regarding nest survival is ongoing for the 2023 breeding season. Future analyses will investigate potential variation in nest survival, incorporating environmental factors and latitude.

4:45: American Kestrel Nest Survival and Productivity Across a Decade in the Southern High Plains of Texas

Sarah Fonville, Texas Tech University, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: American kestrel (Falco sparverius) populations are declining across much of North America and it is a species of increasing conservation concern. One region in which the species appears stable is in the shortgrass prairie of the Southern High Plains. In this region, we have monitored occupancy and reproduction of American Kestrels in a nest box program from 2014 –

2023 in Lubbock County TX. Among 32 initial nest boxes, we observed an occupancy increase from 12% during the first year of the nest box program to as much as 73% in subsequent years. From 2014 – 2022 (data for 2023 is pending for analysis and inclusion) we monitored 158 known fate nest attempts. Observed nest success from 2014 – 2022 averaged 79%, but the modeled daily survival rate averaged 0.9954 (range = 0.9911 to 0.9979), with modelled nest survival averaging 76.5% (± 8.3). Across 10 breeding seasons, average clutch size was 4.6 eggs (± 0.32), with 3.8 (± 0.41) nestlings per hatched clutch, and 3.3 (± 0.51) fledglings per successful nest; 391 fledglings were produced during the 2014 – 2022 study period. Kestrel populations across the nation that use artificial cavities are experiencing nest success rates of 49 – 73%. Our population has high nest success which might be due to suspected site- and pair-fidelity and the nesting experience of pairs, favorable climate, and extended breeding season. We will include 2023 data for a final analysis of productivity and examination of multiple covariates to better assess daily nest survival.

5:00: An Experimental Investigation of the Influence of Green Plant Material in Raptor Nest Microclimate

Audrey Crawford, Texas Tech University, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: Many raptor species place green plant material on their nests during incubation and nestling rearing periods. Several hypotheses have been proposed to explain this behavior; the generally accepted, but unconfirmed, explanation is that greenery functions as a repellent to ectoparasites. We examined the alternative hypothesis that fresh greenery may meaningfully modify the microclimate of raptor nests. Our study species was the Mississippi Kite (Ictinia mississippiensis). We predicted that addition of fresh greenery would 1) increase humidity at nests, 2) decrease temperature at nests, 3) provisioning of greenery would be correlated to periods of low humidity and high temperature, and 4) tree species used for greenery would release more moisture per unit volume compared to species not used. We created 25 simulated Mississippi Kite nests within a controlled environment. 5 were control nests, and we added treatments consisting of 4 local tree species to 5 nests each, monitoring the temperature and humidity levels over 17 hours. Running a Hedges test with the collected data demonstrated a significant difference in temperature and humidity levels within the treatment nests, with all treatments having periods of g>1.0. A changing climate is resulting in increasing aridity and temperatures, especially in already arid regions. Low humidity and high temperature have been demonstrated to reduce nest success of raptors. We have demonstrated that addition of as little as 5 g of greenery can have meaningful influences on nest microclimate. This provides insight into a behavior that could contribute to species longevity, even with a changing climate.

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4:00: Monitoring Changes in Northern Bobwhite Density over 10 years within a Large-scale Experimental Grazing Study in South Texas

Andrea Montalvo, East Foundation, Hebbronville, TX, USA
Abe Woodard, East Foundation, Sarita, TX, USA
Jason Sawyer, East Foundation, San Antonio, TX, USA

Abstract: In South Texas, northern bobwhites (Colinus virginianus) occur on lands where grazing and hunting are integral to the ranch's viability and longevity. Identifying a causal relationship between cattle grazing and bobwhite density requires consideration of precipitation, range productivity, management type, and historical land use, among other variables. In 2014, a large-scale monitoring project was developed on an East Foundation ranch in Jim Hogg County, TX, to observe annual bobwhite density over a 7,505-ha grazing treatment area. Prior to 2014, the area was heavily grazed by cattle. Grazing was removed from 2014–2015. From January 2016 to May 2018, grazing was applied at one of two fixed stock densities within management units, either continuously (n = 4 management units) or rotationally (n = 6 units). In 2018, cattle were removed due to extreme drought. Grazing was deferred from May 2018 through October 2020. Beginning in October 2020, grazing was applied; however, stock density was adjusted each year according to end-of-growing season forage standing crop within each management unit. The resulting structure includes 2 periods of multi-growing season grazing deferral, and periods of grazing activity that can be described as a continuous variable of grazing demand relative to observed end-of-season forage supply (i.e., grazing pressure). Each fall from 2014–2023, we estimated bobwhite density using line-transect distance sampling via helicopter. We will evaluate the relationship between grazing strategy and intensity and northern bobwhite density across 10 years in the context of precipitation and temperature variables within this long-term project.

4:15: Predicted Habitat Overlap Between Montezuma Quail and Feral Pigs in the Davis Mountains of West Texas

Maya Vaughn, Borderlands Research Institute - Sul Ross State University, Marfa, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

Abstract: Feral pigs (Sus scrofa) are highly intelligent, adaptive ecological generalists that affect many ecosystems through rooting. This foraging behavior disturbs the soil, which potentially reduces plant cover, alters soil composition, and ultimately causes nutrient loss and altered vegetation communities that other native species depend upon. There is concern about the damage to sensitive ecosystems that occur predominantly in the sky islands of West Texas. Sky islands generate topographically diverse habitats that occur along an elevational-climatic gradient that many species thrive in, including the Montezuma quail (Cyrtonyx montezumae) in the Davis Mountains (Jeff Davis Co.). Across their range, overgrazing has been identified as one of the biggest contributing factors to population decline due to loss of ground cover and reduced forage availability. We fit a beta regression model, from collected presence data, to predict presence of feral pigs across the entire range of the Davis Mountains. Once we created

a raster of predicted feral pig presence, we were able to calculate a predicted overlap of 51% for feral pig presence and predicted Montezuma quail habitat in the Davis Mountains (Sauer 2018). Feral pig presence doesn't completely overlap with predicted Montezuma quail habitat but occurs in areas that are considered critical for Montezuma quail when their populations are low and resources are scarce. This opens the door to question if feral pigs might have an effect on Montezuma quail resources and habitats.

4:30: Winter Habitat Selection and Movement Behavior of Scaled Quail in the Trans-Pecos, Texas

Caleb Hughes, Sul Ross State University, Alpine, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: Scaled quail (Callipepla squamata) have experienced population declines in the last several decades, primarily attributed to habitat degradation. Changes in habitat composition compound seasonal reductions in resources, such as those occurring during winter. In the Trans-Pecos region, winter presents scaled quail with reduced food and cover availability. As these factors can prompt behavioral responses to resultant changes in habitat quality, monitoring spatial behaviors can lend insight into how scaled quail respond to winter conditions. We hypothesize that scaled quail will use supplemental resources and select for hydrologic features that offer greater availability of food, cover and thermal refuge. We trapped scaled quail in southern Brewster County, Texas during winter 2022-2023 using walk-in funnel traps and fit them with Global Positioning System (GPS) backpacks to obtain winter location data. We captured 314 scaled quail during the study period and deployed GPS backpacks on 37 scaled quail (22 Female, 15 Male). We modelled scaled quail habitat selection and movement using integrated Step Selection Analysis. Covariates included distance to quail feeders, Topographic Position Index (TPI), monthly Modified Soil Adjusted Vegetation Index (MSAVI), and the effect of ambient temperature on step length and selection of hydrologic features. We explored interindividual variation in selection behaviors using Principal Component Analysis of selection coefficients generated from step selection functions. Results from this study will provide novel insights into scaled quail's response to winter conditions.

4:45: Genetic Structure and Variation of Wild Turkey in Oklahoma

Michael Barrett, Texas A&M University - Kingsville, Corpus Christi, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Randy DeYoung, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

R. Dwayne Elmore, Oklahoma State University, Stillwater, OK, USA
Colter Chitwood, Oklahoma State University, Stillwater, OK, USA
Craig Davis, Oklahoma State University, Stillwater, OK, USA
Sam Fuhlendorf, Oklahoma State University, Stillwater, OK, USA
Nicolle De Filippo, Oklahoma State University, Stillwater, TX, USA
Cody Griffin, Oklahoma State University, Stillwater, OK, USA

Abstract: Global change due to anthropogenic pressures has led to biodiversity loss and shifts in wildlife population dynamics. These pressures have led to habitat loss, species declines, and alterations in population structure. These ecological and environmental changes are notably occurring within the Great Plains, USA biome, where state transitions driven by altered ecological processes are restructuring biological communities. For instance, wild turkey (Meleagris gallopavo) populations within this biome have exhibited range-wide population declines because of habitat loss and fragmentation. Population decline and reduced connectivity may severely affect population structure. Furthermore, environmental change may prompt fluctuations in structure and geographic distribution among subspecies, influencing levels of hybridization and introgression. Finally, active management, such as translocations, has had uneven success in restoration of populations. In this study, we will assess the genetic diversity and differentiation of wild turkey populations across Oklahoma and evaluate the extent of hybridization between subspecies and the influence of translocations on population structure. We collected tissue samples from hunter-harvested birds statewide during 2022 and 2023 and generated low-coverage (18x) whole-genome sequence data for 160 individuals from 52 counties. Analysis of genomic data will illustrate current statewide population structure as well as examine the relationship between Rio Grande and Eastern subspecies. Assessments of genomic diversity will provide further inspection of genetic composition and differentiation within and between populations across the state. Through evaluating current genetic structure, this study aims to offer insights toward informing future management of wild turkey within the region.

5:00: Landscape Assessment of Wild Turkey Roosting Habitat and Change in the Texas Rolling Plains

Marcus Blum, Texas A&M University Natural Resources Institute, College Station, TX, USA
Bret Collier, Louisiana State University, Baton Rouge, LA, USA
Byron Buckley, Louisiana State University, Baton Rouge, LA, USA
Seth Harju, Heron Ecological, Kingston, ID, USA
Jason Hardin, Texas Parks & Wildlife Department, Austin, TX, USA
Stephen Webb, Texas A&M University Natural Resources Institute, College Station, TX, USA

Abstract: Rio Grande wild turkey (Meleagris gallopavo intermedia) populations in the Rolling Plains of Texas have remained depressed following drought that lasted from 2010 to 2014. Across most semi-arid rangelands, Rio Grande wild turkey distribution is strongly dependent on the availability of roosting habitat. Thus, loss or alteration of roosting habitat is an increasing concern during the last decade due to its potential impacts on wild turkeys in the Rolling Plains. Our goal was to assess the changes in land use and cover and identify the habitat

characteristics that drive roost site selection of wild turkeys across Bird Conservation Region 19 (BCR 19). We used satellite imagery and ground control points to assess landscape change from 2004 to 2021. Furthermore, we used roost site location data obtained from 3 empirical datasets across BCR 19 and random forest models to predict roost site habitat across the region. Our results indicated that tree cover increased by almost 20% from 2004 to 2021, while invasive tree cover decreased throughout this period by 22.2-47.2%. Our roost site selection model, using data from 2017 to 2018, indicated that turkeys selected roost sites with >4% tree cover and exclusively within flood plains. Additionally, turkeys selected roost sites with 40-60% perennial forb and grass cover and 15-30% woody shrub cover. Our results provide valuable insight into roost site selection characteristics for wild turkeys. Future efforts will link landscape change to roosting habitat amount and distribution to better understand how roost site availability may impact wild turkey populations.

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3:45: Seasonality of Competition Potential Between Desert Bighorn and Mule Deer on Elephant Mountain Wildlife Management Area

Hailey Barton, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Froylan Hernandez, Texas Parks & Wildlife Department, Alpine, TX, USA
Shawn Gray, Texas Parks & Wildlife Department, Alpine, TX, USA

Abstract: Elephant Mountain Wildlife Management Area (EMWMA) serves as a nursery herd for ongoing desert bighorn (Ovis canadensis) restoration efforts. Consequently, the primary management objective is production of surplus animals for use as source stock for translocation. However, EMWMA also provides public hunting opportunities, particularly for mule deer (Odocoileus hemionus). Thus, maintaining a healthy mule deer population is also a key management goal on EMWMA. The area is unique in the high degree of spatial overlap between the two species, presumably leading to competition for resources. However, seasonal shifts in space use by each species may exacerbate or curtail competition. Our goal was to identify potential seasonality in both space use and resource competition between species. In March 2023, we deployed Global Positioning System collars on 30 bighorn sheep and 24 mule deer to investigate temporal patterns of space use. We fit monthly Brownian bridge utilization distributions (UDs) to the movement path of each individual, then combined them to produce monthly UDs at the species level. We then measured overlap between species each month using Bhattacharya's Affinity (BA). Finally, we modeled seasonality of overlap between groups with periodic beta regression models. We found evidence of seasonality in spatial overlap, with maximum overlap during July (BA = 0.59) and minimum overlap during October (BA = 0.40). Our results suggest seasonality of bighorn space use is driven by social behaviors (e.g. rut), but may mitigate potential for resource competition with mule deer at EMWMA.

4:00: Survival and recruitment of white-tailed deer fawns in South Texas

Kevin Lovasik, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Miranda Hopper, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Bryan Spencer, Department of Fish and Wildlife Sciences, University of Idaho, Moscow, ID, USA
Randy DeYoung, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Aaron Foley, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Poncho Ortega, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Landon Schofield, East Wildlife Foundation, Kingsville, TX
Tyler Campbell, East Foundation, San Antonio, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: In large mammals, recruitment is a significant determinant of population growth and influenced by environmental stochasticity, yet the drivers are poorly understood. In white-tailed deer (Odocoileus virginianus), fawn survival is typically the most dynamic parameter influencing variation in recruitment and understanding drivers of survival is important for managing populations. We studied survival and cause-specific mortality of fawns in a deer population not exposed to predator control, supplemental feed, or harvest on the East Foundation's San Antonio Viejo Ranch in South Texas, USA. We captured and radio-collared white-tailed deer fawns at birth by monitoring pregnant adult females equipped with vaginal implant transmitters, and at approximately 4-months and 8-months-old via aerial net-gunning during 2020-2023. We captured 222 fawns and monitored individuals until death or loss of collar. We determined cause of death using molecular and observational field evidence. Kaplan-Meier estimates of 12-week survival across the 4 years ranged from 30-35%, and 1-year survival ranged from 12-24%. Coyotes (Canis latrans) were the primary cause of mortality, accounting for almost half of the documented mortalities, but bobcats (Lynx rufus) and wild pigs (Sus scrofa) also killed fawns. In southern Texas, coyotes are suggested as the most dominant predator of fawns. Most mortality events occurred during the first 5 weeks of life and during late winter (February-March). The high winter mortality was unexpected but coincided with poor range conditions and extreme temperatures. Our low fawn survival estimates suggest annual survival of adult female deer must be high to sustain populations on southern Texas rangelands.

4:15: Assessing Temporal Space Use Stability in the Trans-Pecos Black Bear Population

Matt Hewitt, Borderlands Research Institute - Sul Ross State University, Alpine, USA

Amanda M. Veals Dutt, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Dana Karelus, Texas Parks & Wildlife Department, Austin, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: The recolonizing west Texas black bear (Ursus americanus) population has increased over the last 25 years, with a dramatic increase in the past 5 years, posing new challenges to managers and residents. Monitoring the abundance and distribution of recolonizing black bears is essential to understand the progression of recolonization and inform potential areas of human-bear conflict. Most abundance estimators assume a closed population, which is difficult to satisfy when a population is expanding its range and navigating stochastic environmental patterns in this unique desert environment. However, because bear behavior is highly seasonal, appropriate timing of sampling may satisfy the closure assumption. We examined temporal patterns of space use stability (SUS) among 21 GPS-collared black bears (6F, 15M) in the Trans-Pecos starting Oct 2022. We generated comparative metrics between successive weekly Brownian bridge utilization distributions for each individual, including Pianka's niche overlap ($\bar{x}$ = 0.19, SD = 0.26), peak to peak distance ($\bar{x}$ = 66.19 km, SD = 115.37 km), and 95% isopleth area ($\bar{x}$ = 77021.25 km2, SD = 98771.78 km2). We used ~600 records in a 2-state hidden Markov model to delineate periods of high and low SUS. While temporal patterns were evident, bear space use was highly unstable in this population. The proportion of bears in the stable state was highest from mid-December to mid-May; therefore, population closure may be a tenable assumption during this time. These results will aid management in planning accurate population monitoring and will provide a better understanding of patterns in bear recolonization.

4:30: Fine-scale behavioral patterns of newly recolonizing black bears in West Texas

Nicole Dickan, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Amanda M. Veals Dutt, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: Black bears (Ursus americanus) began recolonizing West Texas in the late 1980s after being extirpated from the state in the 1950s. Despite their protected status, little is known about this population or the rate and extent of recolonization, and information on their behavioral patterns is severely lacking. To that end, we collared 20 bears with GPS collars programmed with 2-hour fix rates. Using hidden Markov models (HMMs) we segmented the movement paths of 19 bears (13 M, 6 F) into 4 behavioral states based on probability distributions of step lengths (SL), turning angles, residence times, and revisitation rates. Two states reflected dispersive movement behaviors ($\bar{x}$SL = 245.31 ± 7.03 (SE), 1054.81 ± 53.33) and two states reflected localized movement behaviors ($\bar{x}$SL = 12.87 ± 0.63, 3.88 ± 0.14). The probabilities of remaining in both dispersive movement states were higher (77% ± 0.01, 71% ± 0.02) than remaining in

either localized movement state (51% ± 0.03, 52% ± 0.02). We then examined the influence of environmental covariates on the transition probabilities between states to investigate which abiotic and biotic factors influence where bears make specific behavioral decisions. Understanding drivers behind bear behaviors can improve our ability to predict future behaviors in novel environments as they continue their recolonization and allow us to predict future conflict areas. Additionally, understanding habitat characteristics associated with these behavioral processes will be crucial for identifying key areas in need of protection for long-term population viability.

4:45: Fire as a driver of bobcat occupancy in East Texas

Parker Trifiletti, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
L. Mike Conner, The Jones Center at Ichauway, Newton, GA, USA
Steve Jack, Boggy Slough Conservation Area - T.L.L. Temple Foundation, Lufkin, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Prescribed fire is an important tool in forest management that reduces fuel loads, maintains historical disturbance regimes, alters vegetation structure, and influences wildlife communities. Bobcats (Lynx rufus) are the largest obligate carnivore in many fire-dependent forested ecosystems in the southeastern USA and therefore are an ideal species to assess the effects of fire on wildlife communities. To examine the influence of fire on bobcat occupancy in a frequently burned ecosystem, we deployed 40 remote cameras on the Boggy Slough Conservation Area in eastern Texas. We collected occurrence data from July to September 2023 and linked these data to landcover and fire history within a 500 m buffer around each camera site. We used fire records from 2015-2023 to calculate the time since most recent fire, mean fire return interval, number of fires, and proportion of area burned. Landcover was categorized as natural pine, planted pine, hardwood forest, or open. We fit occupancy models using landcover and fire history covariates and compared models using AICc. Bobcat occupancy was best predicted by fire history and the probability of occupancy increased with the proportion of area burned (p=0.05). The probability of detection was greatest in natural pine suggesting bobcats may be more active in this cover type. As an apex predator in our system, bobcat occupancy can be used as an indicator of the response to forest management by wildlife species across trophic levels. Our results suggest prescribed fire created forest conditions that improved habitat quality for bobcats.

5:00: Understanding the Diet of an Unmanaged Population of Coyotes in Southern Texas

Anna Racey, Texas A&M University - College Station, Boerne, TX, USA
Tyler Campbell, East Foundation, San Antonio, TX, USA
John Tomeček, Texas A&M University - College Station, Austin, TX, USA

Abstract: Understanding the diet of a species is crucial for effective wildlife management. Predator selection of prey items can strongly influence the population dynamics and food

availability of other wildlife. One such species is the coyote (Canis latrans), whose great dietary plasticity can variably impact other species. With increasing urbanization and changes in land use nationwide, researchers focus on evaluating coyote diet within these contexts. However, understanding coyote diet in a large-scale wildland with a lack of human intervention can provide insight into management on similar properties. Our study aimed to evaluate the diet of a coyote population in southern Texas where no native wildlife is managed by harvesting, trapping, or supplemental feeding and compare it to previous studies involving human intervention. We collected coyote scat from 20 one kilometer transects on the roads of the East Foundation's San Antonio Viejo Ranch every month of 2021. Prey items were morphologically analyzed using relative volume based on a grid system. Overall, we identified 22 unique species with white-tailed deer (Odocoileus virginianus) and feral pig (Sus scrofa) being the most consumed with a dietary shift to vegetation in the fall months. The high proportion of ungulates consumed year long as opposed to high proportions of lagomorphs and rodents shows a distinguishing difference of this study. Further research may be conducted to identify the influence of this population’s diet, among of which could be high coyote density, high preferred prey density, and changes in coyote behavioral activity as well as in their age structures.

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3:45: Monitoring highway mitigation structures for ocelots and bobcats

Daniel Scognamillo, Kingsville, TX, USA
Thomas Yamashita, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
John Young, Texas Department of Transportation, Austin, TX, USA
Michael Tewes, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Roads can have significant impacts on wildlife, including on bobcats (Lynx rufus) and ocelots (Leopardus pardalis). In the United States, the ocelot is an endangered species with vehicle collisions as the leading known cause of mortality. Therefore, road mitigation for ocelots is critically important to conservation of ocelots in the United States. In South Texas, road mitigation structures for ocelots, including wildlife crossings are being constructed for ocelot conservation. As part of this effort, monitoring felid populations pre-, during-, and post-construction of these mitigation structures is critical to assessing their effectiveness and determining road impacts on ocelots. Ocelots, however, are rare on the landscape so bobcats are used as surrogate species to understand ecological impacts of roads on ocelots. We are monitoring bobcat and ocelot populations around US Highway 77 in Willacy and Kenedy Counties with camera traps, GPS collars, and wildlife road mortality surveys to understand how construction of road mitigation structures for wildlife impact habitat use of road areas, including wildlife crossings by bobcats and ocelots. One wildlife crossing is complete on US 77 and nine more will be constructed over the next 10 years. We have documented high populations of and regular wildlife crossing use by bobcats living in the area. We are recording interactions of bobcats with this wildlife crossing considering 4 different behaviors: full crossing, entry/exit, approach, and in the area. This work will help the Texas Department of Transportation improve

designs of road mitigation for wildlife and help support ocelot conservation efforts throughout Texas.

4:00: Development of an Improved Survey Method for the Texas Kangaroo Rat

Julien Washington, Texas Tech, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA
Derek Malone, Texas Tech University, Lubbock, TX, USA

Abstract: The Texas kangaroo rat (Dipodomys elator) currently inhabits five counties in Texas. Habitat fragmentation and changing vegetation patterns are believed to be responsible for the reduction of the population such that it is currently a state threatened species under petition for federal protection. The species rarity and nocturnal activity periods result in them being difficult to survey, monitor, and study. We tested different approaches to develop a repeatable and reliable survey method for these elusive animals. We used the more abundant Ord's kangaroo rat (D. ordii) as a proxy for Texas kangaroo rats due to the species similarity. Our survey trials were conducted on transects set along roads, two-tracks, and in open fields. On roads we tested driving with headlights and spotlights, and walking surveys using spotlights or thermal scopes. On two-tracks and open fields we tested using spotlights and thermals scopes. We also conducted burrow surveys as an indirect measure of kangaroo rats. We are assessing the different methods on basis of detection probabilities with covariates of moon phase, time, temperature, and cloud cover. Our results should provide guidance to optimize survey methods for Texas kangaroo rats, and serve to facilitate improved surveys and monitoring of this elusive species.

4:15: Small Mammal Population Dynamics Across a Native-Invaded Habitat Gradient

Duston Duffie, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Andrew Mullaney, Stephen F. Austin State University, Nacogdoches, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Invasive and non-native vegetation can result in reduced ecosystem function presumably due to the loss of native plant diversity. Historically, open rangelands of southern Texas have been invaded by non-native grasses and native, woody shrubs. Small mammals play numerous vital roles in ecosystems; however, little is known of their response to invasive vegetation and habitat change in south Texas. To evaluate small mammal population dynamics across a native-invaded habitat gradient, we sampled small mammals at the Welder Wildlife Refuge in San Patricio County, Texas, USA. We sampled across six plots: two consisted of native vegetation, two consisted of invasive vegetation, and two intermediate plots. Data were collected from 2019-2023 and we recorded 3,206 captures of 9 small mammal species. To

determine the potential influence of invasive vegetation, we compared relative abundance between each plot for three species (Sigmodon hispidus, Baiomys taylori, and Reithrodontomys fulvescens). For all three species, we found no significant difference in relative abundance between the three levels of plant invasion. However, we observed significant differences in relative abundance between survey season and study years. South Texas rangelands experience frequent droughts which are known to alter vegetation and small vertebrate populations. We observed that the relative abundance of small mammal species was lowest following droughts, which suggests a lag effect on small mammal populations. Therefore, drought cycling may play a more significant role in regulating small mammal populations than vegetation structure alone.

4:30: Mapping Collared Peccary Habitat: Species Distribution Modeling in the South Texas Plains & Trans-Pecos Ecoregions

Conner Ties, Texas A&M University - College Station, College Station, TX, USA
Ty Werdel, Texas A&M University - College Station, College Station, TX, USA
Stephen Webb, Texas A&M University Natural Resources Institute, College Station, TX, USA
Abstract: Collared peccary (hereafter peccary; Pecari tajacu) populations in Texas have shown considerable variation since the 1940s because of urban development and land-use change, among other habitat reductions. Historically, peccaries were distributed throughout central, southern, and western Texas, but current populations occur in the southwestern third of Texas. Despite their relatively widespread distribution and importance as a game animal, prey item, and seed disperser, little scholarly work has been done on the species in the state. Therefore, we seek to identify biotic and abiotic factors that impact peccary distribution across two ecoregions using Maximum Entropy (MaxEnt) species distribution models (SDM) and presence-only occurrences from iNaturalist. In Texas, peccary habitat can be described generally as shrub-dominated semi-arid desert, so we will include these vegetation characteristics into the SDM, along with herbaceous vegetation, anthropogenic features (e.g., roads, development), and agricultural lands. We will develop one SDM per ecoregion (i.e., South Texas Plains and Trans-Pecos) and then assess the transferability of ecoregion-specific models to predict distribution in the other ecoregions; this will allow us to assess habitat generality versus specificity. To date, using data from iNaturalist, we will model 701 observations for the South Texas Plains and 760 detections for the Trans-Pecos. These results will provide managers with spatially explicit tools and distribution maps to restore, manage, and protect peccary habitat. These data can also assist with setting ecoregion-specific season and bag limits, considering peccary are classified as a game species in Texas.

4:45: Morphometrics can be used to estimate body mass and age in wild pigs

David Pearce, Texas A&M University - College Station, College Station, TX, USA
Seth Harju, Heron Ecological, Kingston, ID, USA
Stephen Webb, Texas A&M University Natural Resources Institute, College Station, TX, USA

Abstract: Wild pigs (Sus scrofa) are an invasive species that cause ≥1.5 billion dollars in damage annually. In response to these damages, population control efforts such as eradication are often employed. Population control is necessary to reduce the rapid population growth of the species, which is driven by large litter sizes, high survival, short interbirth intervals, and reproductive maturity at a young age. Demographic information facilitates modeling population size and growth, so morphometrics that can assign an individual to an age class can increase the precision of population models. To investigate which morphometric characters are reliable predicters of body mass and age, we captured wild pigs across 6 study sites in southern Oklahoma. After capture, wild pigs were euthanized, and collected body mass, age, and four morphometric characters: shoulder height, total body length, and chest and stomach circumference. We built separate linear regression models for each morphometric measurement to predict body mass and employed machine learning classifiers (linear discriminant analysis, discriminant analysis of principal components, and naïve Bayes classifier) to assign wild pigs into 2, 4, 5, or 6 age groupings using the four morphometrics measurements combined or individually. Regardless of sex, all four morphometric measurements were highly correlated with body mass ($r^2 \geq 0.921$); however, chest circumference was the most correlated with body mass ($r^2 = 0.976$). Currently, age class assignments have only been run using linear discriminant analysis with the shoulder height morphometric and model accuracy was (≥82.6%) for a two age class model, reproductive and non-reproductive.

5:00: Economic Value of White-tailed Deer in Texas

Jacob Dykes, Texas A&M University - College Station, Kingsville, TX, USA
Shraddha Hegde, Texas A&M University - College Station, College Station, TX, USA
Tammi Johnson, Texas A&M AgriLife Research, Uvalde, TX, USA
Angelica Lopez, Texas A&M University - College Station, College Station, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Alison Lund, Leavenworth, KA, USA

Abstract: Texas ranks among the highest in annual hunters and days spent hunting, and white-tailed deer (Odocoileus virginianus) are the most sought-after game species in the state. White-tailed deer hunting is an important contributor to the state's economy; however, an updated economic estimate is currently unknown. Our goal was to estimate the economic value of white-tailed deer in Texas. We conducted a web-based survey of 100,000 Texas hunting license holders for the 2022–2023 hunting season. Our survey included a filter question directing participants to either a hunter-focused questionnaire or a landowner-focused questionnaire assessing hunter expenditures and landowner expenditures and income related to white-tailed deer. We analyzed survey responses and extrapolated the total reported annual expense to estimate the statewide impact. We had a 9% response rate, with a total of 9,079 respondents. Of those, 6,275 were hunters, and 2,804 were landowners. Average expenditures were $3,348 and $18,812 for hunters and landowners, respectively. The largest annual expenditures were outfitter fees for hunters (average >$1,000) and payroll for landowners (average >$2,900). Hunters spent an average of $2,904 annually on lease fees. The most common landowner expenditure was supplemental feed, averaging $3,593 annually. Once extrapolated to include

the nearly 555,000 white-tailed deer hunters and 199,000 white-tailed deer-related landowners in Texas, total expenditures were $1.9 billion and $2.5 billion for hunters and landowners, respectively. Total annual expenditures related to white-tailed deer in Texas are estimated to be $4.3 billion. Understanding the economic value of white-tailed deer in Texas is important when making management decisions.

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9:00: Relative Efficacy of a Novel GPS Tracking Technology for Monitoring African Lion Movement Behavior.

Kaileigh Smith, Tarleton State University, Austin, TX, USA
Thomas Schwertner, Tarleton State University, Stephenville, TX, USA

Abstract: Solar-powered GPS ear tags represent a novel, cost-effective technology that could revolutionize large carnivore research and conservation efforts by enabling large-scale analyses currently precluded by the prohibitive cost of GPS collar technology. These devices may be particularly useful for monitoring subadult, male carnivores, a demographic often excluded from tracking research because the industry standard – GPS collars (hereafter, collars) – present a strangulation hazard during the animal's growth. While solar-powered GPS ear tags (hereafter, ear tags) have been used to effectively monitor wild ungulates, to our knowledge, they have never been systematically deployed on large carnivores. Our objectives were to 1) compare the relative performance and suitability of a 35 g solar-powered GPS ear tag versus the industry standard – a GPS collar – for field application on lions (Panthera leo), and 2) compare the effect of battery management algorithm on ear tag performance. To evaluate the relative performances of ear tags versus collars, we deployed devices on lions, each fitted with one (1) ear tag and one (1) collar simultaneously. To assess the effect of battery management algorithm on ear tag performance, we deployed pairs of ear tags – differing only in battery management software – on free-ranging cattle. For all analyses, we measured successful fix acquisition rate (SFR), accuracy, precision and consistency over time as indicators of technological performance. Our results provide an in-situ comparison of GPS tracking technology, providing insight into the efficacy of ear tags as an alternative to collars for monitoring lions.

9:15: Assessing the occurrence of large carnivores on pastoral landscapes of the Western Kalahari Corridor, Botswana.

Christopher Mbisana, Tarleton State University, Stephenville, TX, USA
Thomas Schwertner, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Agricultural development is one of the major global threats to wildlife in unprotected areas. In western Botswana, the Western Kalahari Corridor (WCC) is a 200-km unprotected gap between the Kgalagadi Transfrontier Park (38,000 km2) and the Central Kalahari/Khutse game reserves (55,300 km2) and provides critical connectivity between the parks. Although

designated as a “wildlife management area,” in recent decades the corridor has seen a significant increase in livestock farming and associated development. To understand the impact of human development on large carnivores, we conducted a camera trap study in the WCC. Our site was an unprotected and mostly unfenced area of approximately 3,500 km2 centered on the villages of Bere and Kacgae. The sparsely populated area is bisected by a single paved highway and dominated by pastoral farming. Thirty-two boreholes are scatted around the area and provide water to remote cattle posts. We placed 120 camera traps, 60 along roads each paired with a second trap 500-m away from the road. Each consisted of a single motion-triggered infrared camera. We checked traps monthly during February – November 2023. We identified 29 mammal species, including lion (Panthera leo), leopard (P. pardus), cheetah (Acinonyx jubatus), wild dog (Lycaon pictus), and brown hyena (Parahyaena brunnea). We are using occupancy modelling to identify associations with anthropogenic features including roads, villages, cattle posts, and livestock activities. Our results will inform wildlife managers and conservation as to whether the presence of livestock farming in the area impacts the occurrence of large carnivores in this critical corridor.

9:30: If you like the leopards, take them all to America: Social drivers affecting human-leopard coexistence in Nepal's mid-hill region

Rachel Lane, Tarleton State University, stephenville, TX, USA
Hemanta Kafley, Tarleton State University, Stephenville, TX, USA

Abstract: Human-leopard conflict has increased in Nepal's mid-hill region, with leopard-induced mortality accounting for twenty percent of all wildlife-related fatalities. This growing conflict generates negative attitudes towards the Common Leopard (Panthera pardus), threatening effective human-leopard coexistence and the species' survival. Our study investigates local attitudes toward the Common Leopard and its conservation in the community forests of Nepal's mid-hill region. We conducted 123 household surveys, collecting data regarding demographics, socioeconomic factors, general attitudes toward leopard conservation, and human-leopard conflict incidents. Results reveal socioeconomic status, education, and income significantly impact local perceptions. Higher socioeconomic status and education levels associate with positive attitudes, while lower-income individuals often view leopards as threatening to their safety and livelihoods. Despite prevalent retaliatory killings and negative perceptions, few respondents received education regarding leopards and their conservation. Additionally, though ecotourism is lucrative in other areas of Nepal, few respondents felt they could benefit economically from wildlife. Our study stresses community engagement's importance in conservation. Addressing social factors influencing attitudes is crucial for successful long-term conservation. Our results suggest education initiatives, community involvement, and ensuring economic benefits from wildlife could shift perceptions. Ultimately, aligning conservation strategies with community interests is critical to successful and sustainable leopard conservation. Our research provides a roadmap for future projects, highlighting the need for strategies considering the socioeconomic realities of communities living alongside leopards. Understanding and addressing local needs and concerns can help foster positive perceptions of

leopards, ensuring sustainable human-leopard coexistence in Nepal's mid-hills and conserving these incredible felids for future generations.

9:45: Activity Patterns of Ungulates and Their Associated Predators Within Niokolo Koba National Park in Senegal, West Africa

Autumn Patterson, Tarleton State University, Stephenville, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Mamadou Kane, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA
Hemanta Kafley, Tarleton State University, Stephenville, TX, USA
Zachary Farris, Appalachian State University, Boone, NC, USA
Marcella Kelly, Virginia Tech University, Blacksburg, VA, USA

Abstract: Alteration of spatiotemporal diel activity patterns is a common strategy employed by prey species to minimize predation risk, allowing them to exploit high-quality resources while avoiding encounters with predators. However, there are still ecological systems in which these patterns remain largely unexplored. Our objective was to assess the diel activity patterns of ungulates and their associated predators at Niokolo Koba National Park. In 2013, we conducted a single-season camera survey at two study sites within the park: Linguekountou (04 February to 23 April) and Niokolo (30 April to 07 July). We deployed paired cameras for 2,014 trap nights in Linguekountou and 1,707 trap nights in Niokolo and collected vegetation metrics at 30 locations per site. We used the Kernel Density Estimator to analyze the coefficient of activity overlap ($\hat{d}$) across both sites to assess how predation risk affects the diel activity of ungulates. Results suggest that ungulates share a moderate temporal activity overlap ($\hat{d}$ = 0.43) with their associated predators, with Bushbuck (Tragelaphus scriptus) indicating the highest temporal activity overlap ($\hat{d}$= 0.61; n = 425), and Warthogs (Phacochoerus africanus) indicating the lowest temporal activity overlap ($\hat{d}$ = 0.27; n = 813) among associated predators. These data provide a better understanding of the predator-prey activity patterns within wooded savanna communities in West Africa.

10:00: Small Mammal Community Characteristics and Habitat Use Along an Herbivory Gradient in the Central Kalahari Desert, Botswana

Thomas Schwertner, Tarleton State University, Stephenville, TX, USA
Ricky Garibay, Tarleton State University, Stephenville, TX, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA
Kaileigh Smith, Tarleton State University, Austin, TX, USA
Phil Sudman, Tarleton State University, Stephenville, TX, USA

Abstract: The Kalahari Desert of southern Africa contains one of the largest contiguous conservation landscapes in the world. Historically, the region was largely undeveloped and sparsely populated. However, in recent decades, agricultural development and encroachment by human communities and livestock have significantly impacted this system. By developing artificial water points for livestock grazing, humans have altered the presence and behavior of

both domestic and native herbivores, resulting in patterns of herbivory different than those under which the system evolved. This may have altered vegetation communities, potentially affecting biodiversity. We sampled small mammal and plant communities at 10 sites near the villages of Bere and Kacgae, Botswana. Sites were situated along an herbivory gradient between <1 km and >4 km from the nearest artificial water point. We sampled 160 trap-nights per site for a total of 1,600 trap-nights. We captured and marked 60 individual small mammals representing 8 species. The most common small-mammal species encountered were Namaqua rock rat (Aethomys [=Micaelamys] namaquensis, n = 15) and bushveld elephant-shrew (Elephantulus intufi, n = 15). We also captured hairy-footed gerbil (Gerbilliscus paeba, n = 8), bushveld gerbil (Gerbilliscus leucogaster, n = 7), single-striped grass-mouse (Lemniscomys rosalia, n = 7), multimammate mouse (Mastomys sp., n = 5), fat mouse (Streatomys krebsii, n = 2), and southern African pouched mouse (Saccostomus campestris, n = 1). We are using canonical correspondence analysis to categorize mammal communities according to vegetation community and position on the herbivory gradient, and an occupancy modeling approach to assess mammal species habitat use.

10:15: Integrated disease management of white-nose syndrome for tricolored bats in East Texas

Samantha Leivers, Texas Parks & Wildlife Department, Plano, TX, USA
Kyle Gabriel, Texas Parks & Wildlife Department
Jonah Evans, Texas Parks & Wildlife Department, Boerne, TX, USA
Christopher Cornelison, Texas Parks & Wildlife Department
Brian Pierce, Texas A&M University Natural Resources Institute, Brenham, TX, USA
Michael Morrison, College Station, TX, USA
Michael Fuller, Texas Parks & Wildlife Department

Abstract: Since its discovery in New York in 2006, white-nose syndrome (WNS) has spread across much of the eastern United States and has decimated populations of affected hibernating bat species, such as the tri-colored bat (Perimyotis subflavus). An important over-wintering population of ~3000 tri-colored bats roosts in culverts in East Texas, where WNS has remained absent despite Pseudogymnoascus destructans (the causative fungus of WNS) being present in Texas since 2017. Over the course of this project, we examined the logistical feasibility of pro-active treatment of Pseudogymnoascus destructans at these culvert hibernacula, and examined the impacts of these management efforts on disturbance to tri-colored bats.

Conservation and Ecology of Reptiles and Amphibians

9:00: Snake Captures Decline as a Function of Trap Age: Implications for Monitoring Programs

Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Reuber Antoniazzi, Stephen F. Austin State University, Nacogdoches, TX, USA

Josh Pierce, USDA Forest Service, Nacogdoches, TX, USA
D. Craig Rudolph, NA, Santa Paula, CA, USA

Abstract: Demographic and diversity studies rely on sampling techniques that produce representative samples from populations and communities. Snakes, with their cryptic behaviors and prolonged periods of inactivity, make population and community assessments particularly challenging. In terrestrial ecosystems, box traps paired with drift fences have been used widely to survey for large-bodied snakes. However, there has been anecdotal evidence that suggests snakes become trap shy over time, reducing capture rates. Utilizing a long-term trapping dataset of snake captures throughout forests in east Texas and western Louisiana, we sought to determine if snake capture rate declined as a function of trap age (i.e., time it was installed on the landscape). Total snake captures declined across all traps (n = 43) across time when comparing the first year of trapping to subsequent years. These results suggest that to maximize capture success, long-term monitoring programs should attempt to move box traps to from year-to-year as they will provide better assessment on the structure of populations and communities of this taxon group in their habitats.

9:15: Examining variation in environmental variables within Texas tortoise (Gopherus berlandieri) utilization distributions in Cameron County, Texas

Daniel Guerra, Texas State University, San Antonio, TX, USA
Joseph Veech, Texas State University, San Marcos, TX, USA

Abstract: The Texas tortoise (Gopherus berlandieri) is an understudied species compared to federally protected congenerics. Research is needed to better understand its basic ecology and inform conservation efforts. G. berlandieri inhabits Tamaulipan scrublands and coastal populations are associated with low relief clay ridges with thick mesquital scrub typically surrounded by salt prairie grasslands. Our study examines seasonal patterns in G. berlandieri habitat use at a protected natural area in Cameron County, Texas. Twelve tortoises were outfitted with GPS loggers which recorded location once an hour from March 2020 to March 2022. We estimated utilization distributions (UDs) for tracked tortoises as Autocorrelated Kernel Density Estimates (AKDEs) using a 95% and 50% isopleth for each tortoise for each three-month season. We compared UD size to determine if tortoises utilize space differently across seasons over the study period. Applying a use-availability study design, environmental variables including canopy cover and accumulation of precipitation (i.e., flow accumulation) within 100 m of the boundary of a tortoises' UD ("available") were compared to the same variable contained within the tortoises' UD ("use"). Tortoise UD sizes are significantly different across seasons for AKDEs estimated using the both isopleths. UDs estimated using the 50% isopleth are notably small during the winter months, with several UDs < 200 m2 in area. Tortoise UDs tended to have more canopy cover and lower flow accumulation compared to available but unused areas. These results could inform effective habitat management for the Texas tortoise, which utilizes an extremely limited area during portions of the year.

9:30: Texas Tortoise Movement Patterns Following Three Soft Release Periods After Translocation

Christin Moeller, Texas A&M University - Kingsville, Kingsville, TX, USA
Saren Perales, CKWRI / TAMUK, San Antonio, TX, USA
Wraith Rodriguez, CKWRI / TAMUK, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Paul Crump, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: Texas tortoises (Gopherus berlandieri) are a state threatened species in Texas that has experienced sharp declines in population number, and their distribution has become sporadic. Southern Texas lomas, grasslands, and brushlands are the habitat where tortoises can be found; however, urban-suburbanization and commercial development are reducing available habitat for tortoises. Translocation often is suggested as a mitigation option; however, we are unaware of any research that investigated the effects of translocation on Texas tortoises to verify that translocation is a responsible management option. Therefore, we translocated 222 Texas tortoises from a property under development in extreme southern Texas and placed them in equal numbers within 3, 2.4 ha enclosures near Kingsville, Texas. Approximately 26 tortoises/enclosure were outfitted with GPS transmitters to follow their movements. Tortoises were maintained in enclosures for 4, 8, and 12 months as a soft release measure, after which, enclosure walls were removed and tortoises had free-choice to leave the area. Tortoises did not display directional movement or attempt to home, but randomly moved in all directions after each time period. No differences in movement patterns or distances were observed between male and female tortoises. On average, tortoises moved ~25m/day. Mortality rates between soft release periods of translocated tortoises and between translocated tortoises and resident tortoises were similar. Therefore, translocation does not appear to have an immediate negative impact on Texas tortoises. Also, a soft release period of 4 months that incorporates one brumation appears sufficient to halt the homing tendency of Texas tortoises.

9:45: Demography of Alligator Snapping Turtles (Macrochelys temminckii) Along a Fishing Pressure Gradient

Luke Micek, Stephen F. Austin State University, Nacogdoches, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
David Stewart, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA

Abstract: The alligator snapping turtle (Macrochelys temminckii) is a state threatened species in Texas and a candidate for being listed as federally threatened. However, there is a lack of

information on the demography of M. temminckii in the western portion of its range. Passive fishing gear (e.g., trotlines, limblines, juglines) has been identified as a threat to M. temminckii, but its impact on populations has yet to be quantified. We estimated the demographic parameters of M. temminckii in habitats of varying intensities of passive fishing pressure, while also quantifying the extent and persistence of passive fishing gear in aquatic habitats. From June – December 2023, we surveyed for M. temminckii and conducted passive fishing gear surveys at three study sites in east Texas: Alazan Bayou WMA (unfished), the Attoyac River (fished), and Shawnee (fished). We observed differences in age and sex ratios among the fished and unfished study sites. Furthermore, catch per unit effort (CPUE) of M. temminckii was lower at both fished sites (i.e., Attoyac and Shawnee) compared to the unfished site (i.e., Alazan). Passive fishing gear was abundant at the Attoyac and Shawnee study sites, however, the majority of devices were illegally deployed (i.e., abandoned with no gear tag). These results highlight the threat recreational fishing imposes on M. temminckii populations and the need for increased surveillance and removal of illegal passive fishing gear.

10:00: Spatial Ecology of a Secretive Chihuahuan Desert Colubrid

James Emerson, Texas State University, Seguin, USA
Dominic DeSantis, Georgia College & State University, Milledgeville, GA, USA
Jerry Johnson, University of Texas at El Paso, El Paso, TX, USA
Vicente Mata-Silva, University of Texas at El Paso, El Paso, TX, USA

Abstract: We used radiotelemetry to conduct an exploratory study on the behavioral ecology of Lampropeltis alterna in the Chihuahuan Desert of Texas. We tracked two L. alterna (1 M:1 F) between 2017 and 2019. The female displayed a mean daily movement rate (MPD) of 22.39 ± 5.95 m, a mean distance per movement (DPM) of 128.21 ± 26.62 m, a minimum movement frequency (MMF) of 0.55, and a motion variance (MV) estimate of 4.14. The male mean MPD, DPM, MMF, and MV were 43.24 ± 31.20 m, 202.41 ± 71.63 m, 0.67, and 0.69. Female home range size estimates were 37.25 ha (100%MCP), 48.22 ha (95% UD), and 5.28 ha (50% UD), while estimates for the male were 50.55 ha (100% MCP), 9.79 ha (95% UD), and 0.22 ha (50% UD). Rocky slopes represented the most frequently used habitat, and both snakes were observed primarily using underground shelter sites in rocky substrates. We documented numerous long-distance movements and found that L. alterna exhibited larger home ranges than other snake species monitored at the study site.

10:15: Comparing the survival of repatriated and wild alligator snapping turtles in eastern Texas

Connor Adams, Stephen F. Austin State University, Nacogdoches, TX, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA

Abstract: The alligator snapping turtle (Macrochelys temminckii) is the largest freshwater turtle in North America. As such, M. temminckii are sought after for human consumption and are

vulnerable to overharvest or bycatch. Despite having protection from harvest in Texas since the 1980s, M. temminckii are still harvested illegally for food and novelty products. Given their life history, such threats may exacerbate declines in local populations. Therefore, efforts that can bolster wild populations are of importance to M. temminckii conservation. In June 2021, 8 M. temminckii confiscated by federal agents were released at the Angelina/Neches Dam B WMA. Using survival as a metric to evaluate repatriation efforts, we monitored these previously released repatriated turtles alongside 10 wild turtles. We estimated survival probabilities using Hidden Markov Models (HMM) to account for inconsistencies in radiotelemetry data, and to assess how certain covariates (e.g., home range, movement, habitat use, etc.) may impact survival. Overall, repatriated M. temminckii had significantly lower survival than wild M. temmincki. Movement distance between relocations and time of year had a significant influence on repatriated turtle survival. Some reductions in survival probability were likely linked to sex-specific differences in behavior; however, wild M. temminckii had high survival regardless of sex. These results highlight how long-term studies are often difficult, but neccessary to assess survival in long-lived species. Understanding factors that influence M. temminckii survival can inform future conservation efforts, and are especially valuable to translocation efforts attempting to bolster wild populations.

Conservation of Birds and Mammals

9:00: State of Traditional Ecological Knowledge in the Wildlife Management Profession

Ty Werdel, Texas A&M University - College Station, College Station, TX, USA
David Matarrita-Cascante, Texas A&M University - College Station, College Station, TX, USA
Jacob Lucero, Texas A&M University - College Station, College Station, TX, USA

Abstract: Traditional Ecological Knowledge (TEK), described as the relationship between Indigenous peoples and the ecosystem, has always been part of Indigenous communities and their daily lives. However, TEK has progressively been incorporated into the academic and professional field of North American wildlife management and ecology despite its historical domination by Western Scientific attitudes, knowledge, and methods. The objective of this note is to provide an overview of such progression from the standpoint of the first author, an Indigenous Scientist trained in a Western Scientific paradigm. More specifically, the paper categorizes the history and the current state of TEK in the wildlife management profession while providing insights for the future of the field.

9:15: Leveraging Citizen Science to Assess the Impact of Drought and Land-Use Change on Northern Bobwhite Population Stability

Ben Hendrickson, University of North Texas, Lewisville, TX, USA
Andrew Gregory, University of North Texas, DENTON, TX, USA

Abstract: Despite the overall decline of Northern Bobwhite (Colinus virginianus), some population strongholds remain, spread patchily across the species range and encompassing

multiple different ecoregions and habitat types. To successfully arrest the decline of Northern Bobwhite, identifying areas where quail are succeeding, where they are in decline, and what factors are driving quail population dynamics across their range is critical. Furthermore, it is important to conduct these analyses across a large spatiotemporal scale to account for annual stochasticity in environmental conditions and structural variation in quail habitat. Although local quail covey count data is typically a more accurate index of quail abundance, there is significant variation in data collection methodology among state agencies, which makes comparing these estimates across time and large geographic areas difficult. Because North American Breeding Bird Survey (BBS) data collection protocols are nationally standardized, population estimates based on BBS data can be easily compared across a large spatiotemporal scale. Here, we introduce SaveBirds (www.savebirds.app), a web application designed for wildlife practitioners to mine and format BBS data for multiple analyses of avian population trends and present the results of a case-study on Northern Bobwhite quail. We used SaveBirds to acquire Northern Bobwhite count data from 1,717 BBS routes for a 20-year period from 1999-2019. We conducted an Emerging Hotspot Analysis to identify areas of high (HotSpot) and low (ColdSpot) quail population productivity. We then employed Multiscale Geographically Weighted Regression to examine the influence of land-use change and drought on quail population productivity around HotSpots and ColdSpots.

9:30: Fat Bobwhites: Does Supplemental Feed Maintain Northern Bobwhite Mass Over Winter?

Aidan Tautges, East Foundation, Hebbronville, TX, USA
Abe Woodard, East Foundation, Sarita, TX, USA

Abstract: Research has indicated that northern bobwhites (Colinus virginianus) with heavier mass and higher body fat composition are associated with reduced physiological stress and a greater likelihood of surviving severe weather. Mass and percent body fat have also been found to decrease from late fall to early spring. To alleviate those trends, managers often provide supplemental feed throughout the winter, but the effects are relatively unknown. This study aims to determine if providing supplemental feed aids in maintaining body mass of bobwhites through the winter period. The project is taking place on the East Foundation property in Jim Hogg County, with two designated sites consisting of a 2,111-ha fed site and a 6,118-ha unfed site, both under the same harvest rate (20% of fall population). Grain sorghum is distributed weekly on the fed site from the first week in December through the end of the hunting season at a rate of 19.4 kg/km. During the 2022-2023 state-wide quail hunting season, we collected mass measurements from 841 hunter-harvested bobwhites (342=fed site, 499=unfed). We randomly selected 100 bobwhites from each study site, only including those who were either adults or over 150 days old. We found no significant difference between body mass from the fed or unfed sites ($t=1.11$, $df=192.6$, $P=0.268$), with mean body masses of 149.3 ± 1.0 SE grams and 150.0 ± 1.2 SE grams, respectively. Although supplemental feed may increase the survival of bobwhites, our preliminary results revealed this was not in the form of additional body mass.

9:45: Evolution and Outcomes of American Oystercatcher Monitoring Along the Upper Texas Coast

Rebecca Bracken, Gulf Coast Bird Observatory, Lake Jackson, TX, USA
Alex Coenen, Gulf Coast Bird Observatory, Lake Jackson, TX, USA
Susan Heath, Gulf Coast Bird Observatory, Lake Jackson, TX, USA

Abstract: Across many coastal environments, there is an ever-present threat to waterbirds consisting of changes in both quantity and quality of breeding and foraging habitat. One such species, the American Oystercatcher (Haematopus palliatus), is a species of high concern for the U.S. Shorebird Conservation Plan and is a Texas Wildlife Action Plan priority species. Because this species faces serious threats due to its restriction to coastal areas, suspected increase in nest predators, potential contamination of food resources, and habitat alterations through erosion, storm systems, and human modification, Gulf Coast Bird Observatory initiated a long-term study in 2011 to monitor annual productivity and document locations in need of restoration and habitat management. Since 2011, oystercatcher annual nesting success has ranged from 14–81%, with an average of 51%. Monitoring efforts have evolved as more birds were color banded, allowing for yearly resights and specific pair information. This has led to an understanding of pair behavior and movements, recruitment, and breeding territory analysis. Through this project, GCBO has gained insight into the determinants of nesting success and failure, including environmental variables, disturbance factors, and territory quality. With the decrease in oyster shell island size and elevation due to erosion, it is suspected that the number of nesting pairs has decreased as a direct response to these changes. Accordingly, these observations have led to increased recognition of the plight of American Oystercatchers, with multiagency collaboration and partnerships committed to continued monitoring efforts, public education and outreach, and the conservation of this at-risk species.

10:00: Cowbird trapping permitting review

Scott Summers, U., Kempner, TX, USA

Abstract: Cowbird trapping is used to help recover endangered black-capped vireos (BCVI). The BCVI was listed in 1987 and recovered in 2018 by the U.S. Fish and Wildlife Service (USFWS). The USFWS encourages continued trapping during the post-delisting monitoring period, 2019-2030. There is no federal regulatory provision that extends trapping beyond a delisting. Managers at Fort Cavazos must either 1) attain a cowbird federal depredation permit, or 2) use the terms and conditions in the current Cowbird Depredation Order. If Texas trappers trap under the Cowbird Depredation Order for BCVI, they must monitor two lists; including the Texas Species of Greatest Conservation Concern, and/or the U.S. Birds of Conservation Concern and ensure the BCVI is listed in atleast one of two of those lists. Trappers who failure to trap under the authority of a current cowbird depredation permit, or under the terms outlined in the current Cowbird Depredation Order will be in violation of federal law. I will discuss details of trapping under these two means in more detail as it pertains to Fort Cavazos continued post-recovery efforts..

Conservation and Ecology of Birds 4

9:15: Variation in Microplastic Contamination Across Development and Within Brood of Nestling House Sparrows

Alexander Hoxie, Tarleton State University, Stephenville, TX, USA
Ty Cosper, Tarleton State University, Killeen, TX, USA
Joanna Carballo, Tarleton State University, itasca, TX, USA
Rajani Srinivasan, Tarleton State University, Stephenville, TX, USA
Britt Heidinger, North Dakota State University, Fargo, USA
David Westneat, University of Kentucky, Lexington, KY, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA
Michael Butler, Lafayette College, Easton, PA, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Microplastic pollution is an emerging threat to environmental and human health, with concomitant impacts to wildlife, including many species of birds. However, the majority of avian studies have been conducted on seabirds. Despite passerines comprising more than half of all bird species, little is known about how microplastic pollutants impact passerine health. We initiated a pilot study to better understand the abundance of microplastic pollution in songbirds in summer 2023, utilizing house sparrow (Passer domesticus) nestlings as our model taxa through a non-lethal method of microplastic detection (i.e., collection of fecal sacs). House sparrows, being a widespread and human-commensalist species, are ideal bioindicators for microplastic pollution. Our objectives were to determine how microplastic abundance varied across nestling development and among nestlings within a nest. We collected fecal sacs from nestlings at established house sparrow nest colonies in Stephenville, TX, Fargo, ND, Easton, PA, and Lexington, KY. After collection, we subjected samples to chemical digestion using 30% H2O2, vacuum filtration, and examination under a stereomicroscope. We compared microplastic contamination using two metrics: density (number of microplastics/gram fecal matter) and length (mm/gram fecal matter). We detected microplastic contaminants in 83.6% of samples for our Texas colonies (n = 128) and 63.5% of samples for our Pennsylvania colonies (n = 74). Preliminary results suggest no difference in microplastic abundance between young (day 2) and old (day 10) nestlings. By conducting this study on house sparrows, we can obtain broader insight into the prevalence of microplastic pollution within passerine species.

9:30: Parental Attentiveness in House Sparrows Across a Latitudinal Temperature Gradient

Gracie Gold, Tarleton Student Chapter of the Wildlife Society, Brenham, USA
Samantha Aguilar, New Mexico State University, Las Cruces, TX, USA
Lindsey Willingham, Tarleton State University, Stephenville, TX, USA
Gabrielle Names, North Dakota State University, Fargo, TX, USA
Britt Heidinger, North Dakota State University, Fargo, USA

Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Ambient temperatures are changing across the globe and generating a broad range of behavioral responses in many species, including birds. Behavior is one of the first adjustments that organisms can make to cope with stressful environmental conditions. Temperature variation can cause birds to force trade-offs with other behaviors at the expense of thermoregulation. One way to examine potential responses to temperature change is to evaluate behaviors across temperature gradients. Our study examines parental incubation behaviors in free-living House sparrows (Passer domesticus) across a latitudinal and temperature gradient from Texas and North Dakota populations. We hypothesized that ambient temperature is associated with variation in parental incubation on-bouts and nest material delivery rates, and that these behaviors are longer when temperatures are extreme. From May–July 2022 and 2023, we recorded parental attentiveness on incubation days 5, 6, or 7 using video cameras at nest boxes for 4 hours in the morning. Results found no support for our hypothesis across the season in 2022 and 2023. However, in 2022, female on-bouts were longer in North Dakota (n = 26, mean = 34.6 min/hr, 95% CI = 31.6–37.7 min/hr) than in Texas (n = 27, mean = 24.6 min/hr, 95% CI = 20.7–28.5 min/hr; $F_{3,132} = 17.81$, $p \leq 0.001$). This study will increase our understanding of how temperature influences parental attentiveness in passerines, with implications for how birds could respond to climate change.

9:45: Parental provisioning in house sparrows does not vary across temperature gradients

Lindsey Willingham, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Gabrielle Names, North Dakota State University, Fargo, TX, USA
Britt Heidinger, North Dakota State University, Fargo, USA
Samuel Lane, North Dakota State University, Fargo, ND, USA

Abstract: The mechanisms behind Bergmann's rule are poorly understood, but one possibility is parental behavioral differences across temperature gradients influence body size. In birds, food delivery rates can influence altricial young growth rates resulting in body mass differences at fledging. Environmental variables associated with temperature could alter feeding rates. Our study evaluated house sparrow (Passer domesticus) feeding rates across temperature and latitudinal gradients from Texas to North Dakota. We hypothesized that ambient temperature would influence parental feeding rates and nestling body size. If hot temperatures reduce food availability and increase metabolic demands of adults, then feeding rates should decrease resulting in smaller nestling body sizes. We predicted this relationship to be stronger in the southern sites. We provided nest boxes for house sparrows across our study sites. On day 5, 6, or 7 post-hatching, we recorded parental feeding using video cameras placed approximately 2 m from nest boxes for 4 hours in the morning (between 0630-1130 hrs). We collected morphological measurements of nestlings on days 2, 4, 6, 8, and 10 post-hatch. Results showed that nestlings are larger in North Dakota than in Texas on day 10 post-hatch ($F_{3,1302} = 62.88$, $P < 0.001$). However, there is no difference in feeding rates between North Dakota and

Texas (F1,175 = 2.89, P = 0.091). This study will increase our understanding of how parental feeding rates are associated with differences in body size and temperature, with implications for how birds might respond

10:00: Exposure of terrestrial birds to microplastic: The effects of ecological traits

Alexis Baum, University of Texas at San Antonio, San Antonio, TX, USA
Jennifer Smith, University of Texas at San Antonio, San Antonio, TX, USA

Abstract: Microplastics (<5mm) have been found extensively in marine organisms, including seabirds, and have been found to have deleterious effects on birds. However, little is known about the potential exposure of terrestrial birds to microplastics despite plastic pollution being pervasive in terrestrial ecosystems. Moreover, whether bird species are differently exposed based on ecological traits is largely unknown. This study aims to (1) investigate the exposure of terrestrial birds to microplastics by examining gastrointestinal contents and (2) explore potential relationships between microplastic exposure, diet type, and foraging strategies. Birds were opportunistically collected during window strike surveys in Texas, and nine species were selected to represent a broad range of distinct diet types and foraging strategies. The bird species selected were Black-and-white Warbler (Mniotilta varia), Cedar Waxwing (Bombycilla cedrorum), Common Yellowthroat (Geothlypis trichas), House Wren (Troglodytes aedon), Nashville Warbler (Leiothlypis ruficapilla), Purple Martin (Progne subis), Ruby-throated Hummingbird (Archilochus colubris), White-throated Sparrows (Zonotrichia albicollis), and Great-tailed Grackle (Quiscalus mexicanus). The esophagus through the intestines were carefully removed from bird carcasses (n=108) and digested in a 10% potassium hydroxide solution. The resulting solution was filtered, and microplastics were individually extracted, characterized, and counted under a stereomicroscope. To ensure accurate identification, Fourier-transform infrared spectroscopy (FTIR) was employed to verify polymer type. Results suggest that most birds assessed were exposed to microplastics, with ground-feeding birds that have omnivorous and granivorous diets consuming the greatest quantities of microplastics. This research contributes valuable insights into the underexplored realm of microplastic in terrestrial avian populations.

Student Poster Abstracts

1. Impact of Livestock Guardian Dogs, Small Livestock, and Anthropogenic Features on Mesopredator Abundance in the Kalahari Desert

Nancy Montealvo, Tarleton Student Chapter of The Wildlife Society, Stephenville, TX, USA
Christopher Mbisana, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Thomas Schwertner, Tarleton State University, Stephenville, TX, USA

Abstract: Livestock depredation is a major cause of human-wildlife conflict in African pastoral communities. These communities practice traditional farming systems in which livestock (e.g.,

cattle, horse, sheep, and goat) roam freely at a centralized grazing location with a drilled borehole for water needs. Studies have shown black-backed jackal (Canis mesomelas) and caracal (Caracal caracal) frequently predate on small livestock (sheep and goat) in grazing areas. As a result, farmers use livestock guardian dogs (Canis lupus familiaris; LGD) to deter mesopredators from livestock. In this study, our primary objective is to understand the effects of LGDs and small livestock on mesopredator abundance in relation to anthropogenic features in the Kalahari landscape of Botswana. We will examine how small livestock herds with and without LGDs influence targeted (jackal and caracal) and non-targeted mesopredators. Our study site is in the Ghanzi District (GH10 and GH11) at the villages of Bere and Kacgae. We deployed a network of 120 game cameras across the study site from January to December 2023; 60 camera traps were placed on sand or gravel roads and were paired with a second camera approximately 500 m perpendicular to the road into the bush. Cameras were checked once a month, and images were processed using TimeLapse. We will conduct future analyses in spring 2024 to examine mesopredator diversity and richness at roads, cattle posts, and villages. The findings of this study will provide insight into how mesopredator populations are impacted by livestock settlements for future conservation planning.

2. Prey Selection and Diet Composition of Mountain Lions (Puma concolor) in South Texas

Shayla Haiflich, Texas A&M University - Kingsville, Corpus Christi, TX, USA
Katherine McDaniel, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Chloe Nouzille, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Limited knowledge exists regarding the prey selection and diet composition of mountain lions (Puma concolor) in South Texas. In the Trans-Pecos region of Texas, mountain lions have been documented to prey on large game animals such as deer (Odocoileus spp.), javelina (Pecari tajacu), feral hog (Sus scrofa), and domestic livestock, such as cattle (Bos spp.). Due to the importance of white-tailed deer to the Texas hunting economy, we are interested in (1) whether white-tailed deer represent a disproportionate amount of mountain lion diet in South Texas compared to other prey species, and (2) the age and sex of white-tailed deer that are killed by mountain lions. Our primary study sites will be the Comanche and Faith Ranches outside of Eagle Pass. We will investigate these questions using (1) GPS collar data and investigations of kill sites, and (2) genetic analysis of scat samples. Our results will guide decisions regarding the potential management challenges posed by mountain lions on private lands.

3. Variations in waterfowl species composition and habitat selection in two ecoregions in north-central Texas

Cameron Starnes, Tarleton State University, Kyle, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Zachary Bellows, Tarleton State University, Stephenville, TX, USA

Abstract: North American waterfowl have been a popular game species for centuries and have considerable support for conservation over many game species. Even with these conservation efforts, waterfowl numbers are still on a decline and population monitoring is necessary. Our objective is to examine seasonal habitat use and activity of waterfowl at two locations in north central Texas, where little information is known about waterfowl in the area: Tarleton State University's Timberlake Biological Field Station and Palo Pinto Mountains State Park, set to open to the public in late 2024. These sites are in two different ecoregions, managed for wildlife, and do not allow waterfowl hunting. From November 2022 to April 2023 at the State Park, we conducted field surveys at water sources every two weeks. During surveys, we documented numbers, species, sex, behavior, and arrival and departure time. We are continuing these surveys at both study areas from November 2023 to April 2024. We placed game cameras at water sources at both study areas in April 2023 and will monitor cameras for at least one year. From November 2022 to March 2023, we observed 6 species, primarily ringneck (Aythya collaris) and American wigeon (Mareca americana) at the state park. From April 2023 to November 2023, we observed wood ducks (Aix sponsa) and blue-winged teal (Spatula discors) at both study sites. Our ongoing study will improve our understanding of the migration activity of waterfowl, different uses of water sources, and variations in species composition between the ecoregions.

4. Influence of Weather and Urbanization on Coyote Activity across the U.S.

Madison Vasquez, Texas Chapter of The Wildlife Society, New Braunfels, TX, USA

Abstract: One of the major causes of species extinction is urbanization. In fact, urbanization endangers more species and affects more land space in the United States than any other human activity. However, climate change is causing unprecedented changes to weather, which also affects wildlife. Recent research on urban mesopredators suggests a consistent trend toward declining species richness with increasing urban intensity. However, not all research areas or species exhibit these patterns. One of these mesopredators, the coyote (Canis latrans) is an opportunistic carnivore that has adapted to the spread of urbanization and are now present in large metropolitan areas. In this study, we used camera trap data from Snapshot, a multi-institutional collaboration, collected from 2019 - 2020 to perform a comparison between weather and urbanization to compare effects on coyote activity across the United States. We hypothesized that urbanization would have a greater impact on coyote activity. We used a linear regression model with count of coyotes as the response variable and a suite of weather and urbanization covariates as continuous predictor variables. Our results suggest that the mean road density ($p= 0.02160$), cultivated lands ($p= 0.00869$), and GPP (gross primary productivity) ($p= 0.0369$) had the greatest negative effect on coyote activity. We suggest further research on

coyote activity in metropolitan areas because even though coyotes can adapt to urbanization, there are some urbanized components that have a negative effect on coyote activity.

5. A Gut Content Composition Analysis of Four Native Fishes of the Red River.

Gavin Sáenz, Texas Tech University, Lubbock, USA
Wade Wilson, Texas Tech University, Lubbock, TX, USA
Jane Rogosch, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, USA

Abstract: River regulation and degraded riparian habitat can diminish resource heterogeneity that supports riverine food-webs of prairie fishes. Yet, the ecology of many prairie stream fishes is not well understood including baseline knowledge about spatial and temporal variation in diet habits as the availability and quality of aquatic and terrestrial food sources change. Here, we characterize the diets of four species of greatest conservation need, in the Red River: Red River Pupfish (Cyprinodon rubrofluviatilis), Plains Minnow (Hybognathus placitus), Prairie Chub (Macrhybopsis australis), and Red River Shiner (Notropis bairdi). We attempted to collect ten of each species at each site for our six sites across the Red River from spring, summer and fall of 2023. Gut contents were extracted using a luer syringe, homogenized in 10 mL of DI water, and dried onto a gridded filter for characterization of diets. We subsampled 20% of the filter unless the coverage of diet items occupied less than 50% of the filter. We divided diet contents into 10 categories to represent aquatic and terrestrial primary producers, macroinvertebrates, vertebrates, and other miscellaneous items. Feeding strategies and relative diet specialization were evaluated based on the relationship between prey-specific abundance and the frequency of occurrence of diet items. For example, Plains Minnow diets were comprised of high abundance and occurrence of diatoms indicating a more dominant reliance on aquatic primary production compared to other species. Feeding habits from this analysis will be a baseline to inform the conservation of these species in the face of environmental change.

6. Movements of Feral Cats on the Campus of Abilene Christian University

Ian Massey, Abilene Christian University, Abilene, TX, USA
Emily Thornock, Abilene Christian University, Abilene, TX, USA
Avy Langston, Abilene Christian University, Abilene, TX, USA
James Carpenter, Abilene Christian University, Abilene, TX, USA

Abstract: Abilene Christian University (ACU) has transformed its perspective on feral cats (Felis catus), viewing them not as nuisances but as assets in managing pests on campus. Through implementation of a Trap-Neuter-Release (TNR) program, ACU has neutered 120 cats since 2014. However, there remains a need for further research to understand feral cat behavior and interactions for effective management. This study aimed to enhance our understanding of movement patterns of feral cats on the ACU campus, explore interactions between different sub-populations, and provide preliminary data for future comprehensive studies. The study, conducted in the spring of 2023, employed radio telemetry and GPS tracking to collect data on

feral cat behavior. Collars with radio transmitters (less than 5% of body weight) were fitted to 6 cats. An Apple AirTag (Bluetooth technology) was attached to another cat. Data collection involved tracking the cats during four six hour time blocks during 4 8-day periods between February 11, 2023 and April 16, 2023. Of the 4 cats tracked the length of the study, 2 were abandoned domesticated cats, while 2 were born feral. The domesticated cats exhibited different behavior compared to feral cats . Feral cats had larger home ranges, avoiding human interaction, while domesticated cats had smaller home ranges near feeding sites and high-traffic areas. Sub-colonies showed no distinct grouping based on feeding sites. Spatial behavior was influenced by human interaction, feeding sites, and weather conditions. The study identified potential ecological impacts, such as competition for resources and increased spread of health issues.

7. The Northern Bobwhite Decline in Texas: is Habitat Loss Truly to Blame?

Abby Balson, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Jackson Baack, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, schertz, TX, USA
Kristyn Stewart-Murphy, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Sinton, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Habitat loss is considered an ultimate cause of the northern bobwhite (Colinus virginianus) decline. Even within population strongholds of northern and southern Texas, the species appears declining and habitat loss is considered the cause. Our objective was to evaluate the habitat-loss hypothesis by quantifying the long-term trend (1938–2023) in bobwhite habitat in northern and southern Texas. We used historical (1938–1992) and projected (1992–2023) land cover datasets to quantify changes in 2 cover classes associated with habitat loss (urban and cropland). We also quantified the amount of bobwhite habitat by reclassifying cover classes into habitat or not habitat. Percent urban approximately doubled (from ≈0.5% to 1.0%) during 1938–2023 but remained a small percent of the landscape (<2%) in both regions. Percent cropland also remained stable in northern (18.7–27.0%) and southern (12.2–13.1%) Texas. Moreover, the amount of bobwhite habitat was high and stable in both regions (60–70%). Thus, we did not find evidence for the habitat-loss hypothesis and hypothesize that other factors (e.g., a prolonged dry cycle) may be responsible for the bobwhite decline in Texas.

8. Trends in raptor admissions to wildlife rehabilitation centers across 13 years in the southern High plains of Texas

Mackenzie Hall, Texas Tech University, LUBBOCK, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: As urbanization increases, human and wildlife interaction and conflicts are becoming more frequent. Wildlife rehabilitation centers have become important resources for a public that has become increasingly concerned for the well fare of injured wildlife. However, details on admission rates and outcomes are often lacking. We examined 13 years of admission data for birds of prey submitted to the South Plains Wildlife Rehabilitation Center and Night Wings Rehabilitation Center, both located in Lubbock Texas. The raptors submitted were categorized by reason for admission: 1) collision, 2) illness, and 3) other. Submissions were also categorized by age: 1) independent (adults and juveniles after their first winter), 2) juveniles in their first winter, and 3) dependent juveniles (e.g., nestlings and fledglings). Owls however were categorized only as independent and or dependent juveniles. We recorded 3,231 individuals of 28 raptor species (2 Cathartiformes, 15 Accipitriformes, 4 Falconiformes, and 7 Strigiformes) admitted during the study period at an average of 248.6 admissions per year. Seven species each accounted for ≥ 5% of admissions. Adult and older juveniles accounted for 53%, first winter juveniles accounting for 14.4%, and nestling and fledglings accounting for 32.5% of admissions. Collisions accounted for 50% of admissions, various illnesses accounted for 10%, and rescue/kidnapping of nestlings accounted for 26% of admissions. Among collisions injuries, the most common presentation was broken wings (51%). Our data indicate raptors are a commonly admitted taxonomic group, possibly due to their easy recognition and appreciation by members of the public.

9. Interactions Between Collared Peccaries and Feral Hogs on a Southern Gulf Coast Rangeland

Laken Mize, Stephen F. Austin State University, Montgomery, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Duston Duffie, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Invasive species can negatively impact native species through negative species interactions and competition for resources. For example, native collared peccaries (Peccari tajacu; peccaries) utilize similar habitats and forage as invasive feral hogs (Sus scrofa), which researchers have speculated is the cause of declines in peccary populations over the last 60 years. In addition, peccaries are known to alter their activity patterns when feral hogs are present. Our goal was to evaluate potential interactions between peccaries and feral hogs to better understand the effects of this invasive species on peccaries. We established 24 remote camera stations spaced approximately 1 km apart on the Welder Wildlife Refuge in San Patricio County, Texas. We compared hourly peccary activity at sites with and without feral hog presence from July 2021 to October 2021. Overall, peccaries exhibited a crepuscular activity pattern when feral hogs were not present; however, their activity covered a wider range of activity times in the presence of feral hogs. Specifically, we observed more peccaries in the early morning, midday, and later in the nighttime at sites with a feral hog presence, suggestive of avoidance behavior. Species interactions are an important parameter to consider in wildlife management, especially when invasive species alter the behavior and conservation of native wildlife populations.

10. An Assessment of the Impact of Aoudad on Palatable Shrubs at the Fort Davis National Historic Site, TX

Eliana Dykehouse, Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: Herbivores strongly influence plant communities by changing vegetation composition, diversity, and productivity. Moderate browsing has been shown to stimulate growth of lateral buds along stems, thus increasing forage availability. Over-browsing, however, reduces foliar cover, affecting the plant's ability to capture sunlight, photosynthesize, and reproduce. The rapid population growth and dispersal of aoudad (Ammotragus lervia) following their introduction in Texas during the 1950s has caused concern about the impact that overabundant exotic populations may have on native vegetation. This highlights the need to understand how aoudad are utilizing vegetation and how this resource use impacts the landscape. The Fort Davis National Historic Site is absent of livestock grazing and a large population of aoudad frequents the area. These factors make it a suitable site to evaluate plant response to aoudad browsing pressure. To do so, we selected five species of palatable shrubs: fragrant sumac (Rhus aromatica), netleaf hackberry (Celtis reticulata), honey mesquite (Prosopis glandulosa), littleleaf leadtree (Leucaena retusa), and gray oak (Quercus grisea). Four individuals from each species were chosen and monitored using remote cameras to determine ungulate species visitation frequency and abundance. We built exclosures around two individuals of each species during July 2023. In October 2023, near the end of the growing season, we measured unlignified growth on both unexclosed and exclosed plants. Surveys will be repeated in 2024. Results from the two sets of plants will be compared to quantify the growth difference in plants that experience browsing pressure from aoudad and those that do not.

11. How You Measure Matters: Understanding the Scale at Which Bobwhites Respond to Habitat and Rainfall

Jackson Baack, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, schertz, TX, USA
Abby Balson, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kristyn Stewart-Murphy, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Sinton, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Although the positive influence of habitat and rainfall on northern bobwhite (Colinus virginianus) is well documented, what is unknown is the scale at which populations respond to these factors. Our objective was to determine the influence of scale on habitat- and rainfall-quail relationships in northern and southern Texas. We used roadside survey data from Texas Parks

and Wildlife Department to estimate bobwhite relative abundance in northern (n = 71 routes) and southern (n = 36 routes) Texas. We then used 2019 National Land Cover Data and CropScape imagery to quantify bobwhite habitat and PRISM to obtain annual rainfall. We buffered survey routes to various radii (from 250-m to 25-km) and quantified the amount of habitat and rainfall. We used a generalized linear model to quantify the relationship between bobwhite abundance and habitat (or rainfall) at each buffer size and used psuedo-r2 to quantify the strength of the relationship. In northern Texas, we documented a positive relationship between bobwhite abundance and habitat and a negative relationship between abundance and rainfall across all buffer sizes. The strongest relationship for both variables occurred at the 25-km buffer (psuedo-r2=0.07 and 0.32, respectively). In southern Texas, we also documented a positive relationship between bobwhite abundance and habitat, with the strongest relationship at the 10-km and 25-km buffers (psuedo-r2=0.06). However, there were no significant relationships between abundance and rainfall. Our results illustrate the strong influence that scale may have on relationships and how failure to consider its influence may result in contrasting conclusions.

12. Anthropogenic and Climate Effects on Striped Skunk Observations via Game Camera

Adriana Puzon, Texas State University, Cypress, USA
Sarah Fritts, Texas State University, San Marcos, TX, USA
Madison Vasquez, Texas Chapter of The Wildlife Society, New Braunfels, TX, USA
Sarah Barnes, Texas State University Student Chapter of The Wildlife Society, San Marcos, TX, USA

Abstract: Exponential human growth and the resulting urbanization and climate change of the past few hundred years have affected wildlife. While these changes have been disastrous to countless species, a few species are urban exploiters and urban adapters and remain abundant through anthropogenic disturbance, including the striped skunk (Mephitis mephitis). We used camera trap data from across the USA available through Snapshot to assess striped skunk relationships with urbanization and weather. We expected fewer skunk observations in areas with greater anthropogenic development. We then used generalized linear models with negative binomial responses in RStudio to examine potential relationships between anthropogenic covariates (cultivated land, wild vegetation, gross primary productivity, impervious ground cover, and housing density) and weather covariates (maximum temperature, minimum temperature, precipitation, and temperature difference) A total of 176,425 trap nights resulted in 482 skunk detections. No anthropogenic covariates[SF1] had a significant effect on skunk observations. In 2019, mean precipitation significantly affected the likelihood of skunk observations (p= 0.018), with an inverse relationship between skunk observations and mean precipitation. In 2020, average daily temperature difference (p= 0.009) and minimum temperature (p= 0.013) affected skunk observations, with a direct relationship between both covariates and skunk observations. Previous studies posit that skunk observations occur most frequently in areas of moderate human disturbance. Since striped skunks are cryptic and did not appear very frequently on camera, getting skunks in hand and tracking them via GPS collar may assist with further study into anthropogenic effects on skunks.

13. Scaled Quail Food Preference in West Texas

Charles Pouland, Texas Tech University, Wolfforth, TX, USA
Dean Wiemers, Southwest Texas Junior College, Uvalde, TX, USA
Daniel Tidwell, Southwest Texas Junior College, Uvalde, TX, USA
Robert Zaiglin, Uvalde, TX, USA
Eric Grahmann, El Coyote Ranches, Goliad, TX, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Bryson Wall, Texas A&M Kingsville, Kingsville, TX, USA

Abstract: Quail populations are declining across the United States. Scaled quail (Callipepla squamata) have declined by 66% in Texas. Identifying specific food preferences can allow proper management of this species in West Texas where birds once flourished but have declined due to poor land use practices. A few studies investigate the diet selection of scaled quail and have been performed in Arizona and New Mexico. However, few have been limited in west Texas. Enhancing plant species preferred across the landscape can provide viable populations for future establishment by dispersal and provide connectivity between scaled quail populations. Crop contents were analyzed from 60 harvested birds. Contents of each crop were separated by seed, mast, vegetative, and insect. A total of 749 plant species were found in all crops with 133 individual plants. This results in an average of 13 different plant species per crop. Forbs were the most common component, followed by woody plants, succulents, grasses and insects. Seeds represented 62% of the food components consumed. Seeds from woody plants, grasses, and succulents are important and may provide a nutritional bridge that occurs seasonally to meet energetic requirements. Due to the diversity and abundance of forbs in scaled quail diets, managers may be wise to carefully plan widespread applications of herbicides (i.e Spike) on the landscape that result in forb kill if the management of scaled quail is an important ranch objective.

14. Bushbuck Distribution in Niokolo Koba Park, in Senegal, West Africa

Grace Soechting, Tarleton State University, Kyle, TX, USA
Autumn Patterson, Tarleton State University, Stephenville, USA
Hemanta Kafley, Tarleton State University, Stephenville, TX, USA
Mamadou Kane, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA
Marcella Kelly, Virginia Tech University, Blacksburg, VA, USA
Zachary Farris, Appalachian State University, Boone, NC, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Large mammal populations are facing a global decline. The bushbuck has a wide distribution throughout Africa, and it is an important ecological and socioeconomic species, but few studies exist on this species, especially in Senegal. In Niokolo Koba National Park, in the southeast of Senegal, we studied the bushbuck (Tragelaphus scriptus) distribution. Our first objective is to investigate their spatial distribution across the entire protected area. The second

objective is to identify important landscape and habitat variables explaining their distribution. In 2013, we conducted a single-season camera survey at the park's study sites: Linguekountou (04 February to 23 April) and Niokolo (30 April to 07 July). We deployed paired cameras and collected vegetation metrics at 30 locations per site. We deployed cameras for 2,014 trap nights in Linguekountou and 1,707 trap nights in Niokolo. The trap nights have resulted in 4,511 animal detections, which included 1,842 ungulate detections, including 425 bushbuck detections (Linguekountou; n = 310, Niokolo; n = 115). We will use Maxent software and ArcGIS to model bushbuck distribution and examine habitat use. This data will provide a better understanding of bushbucks' distribution and variables influencing their occurrence within the two sites of Niokolo Koba National Park.

15. Advancements in Population Monitoring: Evaluating Space to Event Models for White-Tailed Deer Surveys in Rangeland Ecosystems

Javier Robledo, Texas A&M University - Kingsville, Robstown, TX, USA
Aaron Foley, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: White-tailed deer (Odocoileus virginianus) populations play a crucial ecological role in rangeland ecosystems and hold significant economic and conservation importance. White-tailed deer populations are monitored via methods such as aerial surveys, spotlight counts, and trail camera surveys. Each method offers a different combination of strengths and weaknesses in terms of accuracy. Trail camera surveys have become popular due to ease of use but population estimation from cameras without individually marked animals is challenging. For instance, baited surveys can result in skewed sex and age ratios, leading to population underestimation. Additionally, some methods require auxiliary data, such as animal movement rates, which can be difficult to obtain. Recently, there have been developments in using space to event (STE) models by using time-lapse settings in trail cameras. The STE model is based on using the total area of the viewshed that is photographed until an animal is detected to generate an estimate of animal density. We are evaluating STE models in a 92-ha, game-fenced site containing White-tailed deer near Kingsville, Texas, USA. Results of the STE models will be compared with White-tailed deer population estimates generated by baited camera surveys and aerial drone surveys using thermal cameras. Successful implementation of the STE method could offer a versatile, noninvasive approach applicable to species of large animals.

16. Wildlife Disease Research In Texas: Trends Over The Past Three Decades

Summer Aguilar, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Genoveva Ramirez, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Carli Rotondi, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Jamie Benn, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Texas encompasses a unique geographical region that spans ten ecoregions and hosts a diversity of wildlife. It is also a central point for major bird migratory flyways, hosts > 1930 km of international border with high movement of people and animals, and is situated in a climatic region expected to warm significantly in the next few decades. These factors make Texas a region of interest for understanding wildlife disease emergence and zoonotic disease risk. Here, we reviewed three decades of literature reporting wildlife diseases in Texas to understand regional and temporal trends. We utilized the Web of Science platform to perform a literature review using the following search terms and Boolean operators: “disease” AND “wildlife” AND “Texas”, which returned 772 primary research articles as of September 2023. These were filtered by a strict set of criteria to identify >90 primary articles. We noted a gradual increase in disease research in Texas with most studies focused on cervids, feral species (e.g., Sus scrofa), and species at the urban-wild interface (e.g., coyotes [Canis latrans] and raccoons [Procyon lotor]). Pathogens that were most prevalent in the literature were vector-borne, including Trypanosoma cruzi (Chagas disease) and Borrelia burgdorferi (Lyme disease). Zoonotic diseases comprised >50% of the literature reviewed. We acknowledge that, in part, these trends reflect researcher interests and funding opportunities; however, it shouldn’t diminish the importance of Texas as a geographically important region as species distributions shift and vectors experience less seasonality with climate change.

17. Assessing the Efficacy of Integrating Light Meters with GPS Transmitters for Use in Wildlife Research

Jessica Johnston, Kingsville student chapter of The Wildife Society, Kingsville, USA
Caleb McKinney, Texas A&M University - Kingsville, Kingsville, TX, USA
Katherine Travis, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Leonard Brennan, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Humberto Perotto-Baldivieso, Texas A&M University - College Station, College Station, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

John McLaughlin, Lubbock, TX, USA

Abstract: Vegetation cover and structure provide critical protection from abiotic conditions and can limit predation risk for many wildlife species. Measures of overhead vegetation are typically collected with handheld methods that are limited logistically at large scales, or remotely sensed, which can be cost-prohibitive. Given the importance of overhead vegetation in structuring ecological patterns and the difficulty of collecting this information, alternative methods to estimate overhead vegetation is a critical need in wildlife research. Many wildlife tracking devices are solar-powered and often collect light-intensity data that are typically used to assess transmitter battery performance. As overhead vegetation cover intercepts light, light-intensity data collected from these tracking devices may also be used as an index of overhead vegetation cover. To explore this possibility, we tested the performance of GPS transmitters equipped with a light meter and compared readings to scientific-grade light meters. In August 2023, we conducted 97 paired light meter comparisons in Dimmit County, Texas, USA. Within stratified vegetation communities (Tamaulipan thornscrub or mesquite grassland), paired light meters were deployed in low, medium, and high shrub cover areas. Data were collected every hour for a minimum of 24 hours at each location. In addition to categorical measurements of shrub cover, overhead leaf area index was collected using a ceptometer. Preliminary analyses will explore the comparative relationship between light intensity and overhead vegetation cover to determine if these data can act as a proxy for vegetation cover at locations used by wildlife species.

18. Perceptions of Livestock Owners and Herders on Lion Coexistence in the Kalahari Landscape

Sebastian Rogers, Tarleton Student Chapter of The Wildlife Society, Friendswood, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Thomas Schwertner, Tarleton State University, Stephenville, TX, USA
Kaileigh Smith, Tarleton State University, Austin, TX, USA
Otshabile Bahetoleng, Texas A&M University - College Station, College Station, TX, USA

Abstract: Human-lion conflict is likely to occur in areas where there is high livestock encroachment into lion (Panthera leo) territories. In the Ghanzi District of Botswana, the number of cattle posts (designated areas for keeping livestock) has grown rapidly in the last 50 years. As a result, livestock depredation by lions has significantly increased. This is cause for concern for both lion conservation and the economic sustainability of farmers' livelihoods, especially because this region provides critical connectivity between lion populations in the Central Kalahari Game Reserve and the Kgalagadi Transfrontier Park, two of the largest protected areas in southern Africa. To effectively alleviate potential human-wildlife conflicts arising from lion depredation, mitigation efforts should actively involve local stakeholders to ensure long-term efficacy. However, these strategies are often implemented without consulting those who are expected to coexist with wildlife. The objective of our study is to gauge the perceptions of livestock owners and herders in the Ghanzi district coexisting with lions. We collected data through a combination of face-to-face and telephone interviews in which respondents answered

a series of open-ended questions regarding their livestock management practices and past experiences with wild predators. We asked respondents to share their ideas on human-lion conflict mitigation and coexistence strategies. We will use cultural consensus analyses to compare the perceptions of respondents according to their respective experiences with lions. These results will provide valuable insight into which mitigation strategies are both effective and acceptable to the farming community.

19. Effects of Minimizing Soil Disturbance on Restoring Cedar-Elm Encroached Riparian Grasslands

Chloe Delahoussaye, Tarleton State University, houston, USA
David Johnston, Tarleton State University, Comanche, TX, USA
Jeff Breeden, Tarleton State University, Stephenville, TX, USA

Abstract: In the last 200 years, 80% of riparian corridors have disappeared in North America and Europe. Riparian corridors are diverse and stable ecosystems that provide habitat for the movement of wildlife. Woody plant encroachment of native and invasive trees within riparian floodplain grasslands alters ecological services and hinders movement of wildlife. Native perennial bunch grasses average 0.3-1m in height and root systems extend 3-5m. These deep and fibrous root systems stabilize soil and assist in water infiltration in these riparian grasslands. Woody encroachment on grasslands is a global phenomenon that is transitioning grasslands to shrubland ecosystems. Woody plant encroachment of historical riparian floodplain grasslands within Texas results in closed canopy hardwood forests with understories dominated by cool season, annual grasses, and forbs that alter the below ground composition within these ecosystems. Biodiversity is essential for riparian corridors with 70% of vertebrate species utilizing these corridors throughout their lifespan. Native cedar elm within the cross-timbers and prairies region of Texas can become the dominant woody plant species within unmanaged riparian floodplain grasslands, creating a monoculture that drastically alters the plant community. Management and restoration efforts to restore these grasslands include prescribed burning or intrusive soil tilling. Here, we investigate the efficacy of restoring a cedar elm encroached riparian grassland through different seeding methods and minimizing soil disturbance. This research will help develop and inform management decisions for the restoration of historical riparian grasslands within central Texas as wildlife corridors.

20. Effects of Feral Swine on the Spatial and Temporal Patterns of White-Tailed Deer

Joshua Pawlik, Tarleton State University, Arp, TX, USA
Ricky Garibay, Tarleton State University, Stephenville, TX, USA
Zachary Bellows, Tarleton State University, Stephenville, TX, USA
Autumn Patterson, Tarleton State University, Stephenville, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: White-tailed deer (Odocoileus virginianus) and feral swine (Sus scrofa) engage in interspecific competition for resources within ecological systems. Ordinarily, feral swine exert competitive pressure, displacing white-tailed deer from the area, resulting in each species' predominant occupation of distinct habitats. Nevertheless, certain circumstances may lead to the co-occurrence of white-tailed deer and feral swine within the same habitat, fostering resource-sharing dynamics. To better understand this relationship, we used game cameras to conduct a multi-season analysis of the occurrence of white-tailed deer and feral swine in Palo Pinto Mountains State Park in northcentral Texas. The objective is to evaluate both species' occurrence patterns across various camera survey sites, focusing on investigating species' temporal and spatial patterns for potential interspecies interactions. We have actively monitored white-tailed deer, and feral swine since April 2021. Our methods involve placing 20 game cameras 51 cm above ground level, in randomly selected locations, and spaced at least 250 meters apart. We will monitor white-tailed deer and feral swine at each camera site throughout the summer and winter seasons from 2021 to 2023. We use TimeLapse software to evaluate data collected from each camera site. Our findings will be shared with local wildlife management authorities to further conservation and management practices to ensure the longevity of the Parks ecosystem.

21. Using Non-Invasive Technologies to Determine Species Richness and Abundance in Support of an Applied Conservation Genetics Project

Julia De La Cruz, St. Mary's University, San Antonio, TX, USA
Melissa Karlin, St. Mary's University, San Antonio, TX, USA

Abstract: Measuring species presence and abundance can be useful for designing conservation management plans, or as a first step in directing applied conservation genetics projects. While there are many methods for measuring such attributes, trail cameras have become very popular non-invasive tools for recording species richness, abundance, animal behavior, and even identifying individual animals if unique markings or morphology are evident. The purpose of this research was to measure coyote (Canis latrans) abundance and estimate coyote morphology at sites in the Hill Country, San Antonio, and Galveston, TX areas. The results of this project are being used to guide efforts for coyote scat collection, in support of a larger applied conservation genetics research project. Multiple trail cameras were placed at every site, each was baited, and a series of markers were used in the camera’s view to estimate morphology of coyotes. Cameras were active for a minimum of 30 days at each site and after collection, photos were analyzed to calculate trap events, trap success, species diversity and evenness for all wildlife recorded. Morphology measurements were estimated for body length, shoulder height, width of head and tail length, if and when they were visible in photos with a scale present. The results of this research will be used to target areas for coyote scat collection, to support a conservation genetics project that is investigating levels of hybridization present in coyotes and analyzing diet of these animals.

22. Efficacy of Juniper Removal on Plant Communities within Riparian Corridors in the Palo Pinto Mountains Region of Texas

Hunter Jacobson, Tarleton State University, College Station, TX, USA
Zachary Bellows, Tarleton State University, Stephenville, TX, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA
David Johnston, Tarleton State University, Comanche, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Riparian corridors contribute to landscape-level ecological diversity. In semi-arid rangelands, they exist as fragments and persist only because of the unique hydrologic regime of the riparian zone. However, they also contribute, as well as the surrounding watershed vegetation, to the hydraulic regime which they depend on. Woody encroachment of juniper species into rangelands has widespread and ongoing impacts on grassland ecosystems and their linked ecosystems. In this project we characterized the riparian community of several ephemeral stream reaches prior to and following restoration activities along established riparian buffers in Palo Pinto County, Texas. Based on information from historical aerial photos, field measurements, and NRCS Ecological Site Descriptions, land use has significantly shifted the plant community away from its presumed historic reference community. This work is done in relation to restoration activities that include juniper removal to promote native community diversity. Our results indicate that in the present state, riparian corridors are dominated by Ashe juniper (Juniperus ashei J. Buchholz); however, removal of large juniper alone doesn't constitute restoration. Adaptive management including litter dispersal, appropriate herbaceous seed mixes, invasive species management, and woody species management at lower successional states is needed to restore functional diversity to these riparian corridors.

23. Impact of Minimizing Soil Disturbance on Restoring Mesquite Encroached Grasslands

Liliana Navar, Tarleton Student Chapter of The Wildlife Society, El Paso, TX, USA
Jeff Breeden, Tarleton State University, Stephenville, TX, USA
David Johnston, Tarleton State University, Comanche, TX, USA
Chloe Delahoussaye, Tarleton State University, Houston, USA
Hannah Atkinson, Tarleton State University, Houston, TX, USA

Abstract: Woody plant encroachment is one of the greatest contemporary threats to mesic grasslands of the central United States. Woody encroachment is estimated to result in the loss of 75% of rangelands by 2040. Fire suppression, overgrazing, and land mismanagement has resulted in expansive woody plant encroachment throughout Texas. Native Honey mesquite has become a nuisance within Texas and invasive throughout the world. As percent canopy composition of Honey mesquite increases so does the density and longevity of annual cool season grasses resulting in a decrease of native perennial bunch grasses. This alteration of the herbaceous layer reduces forage availability for livestock and habitat for wildlife. Additionally, woody plant encroachment transition of grasslands to shrubland ecosystems imperils grassland-dwelling bird species populations. This reduction and loss of perennial bunch grasses results in a decline of suitable habitats for species such as the Northern bobwhite (Colinus virginianus). Other bird species are reliant on these grasslands for overwintering habitat. Recommended

restoration treatments for woody plant encroachment include the use of mechanical and chemical tree removal which could interfere with essential ecosystem services. Additionally, soil disturbance within grasslands damages roots, modifies soil composition and structure, and has negative impacts on plant communities. Here we investigate the efficacy of minimizing soil disturbance on establishing native grass within a Honey mesquite encroached grassland in central Texas. We hypothesize that native warm-season grasses can be successfully seeded into the historical grassland ecosystem restoring habitat for grassland-associated bird species.

24. Silver Bluestem as a Catalyst for Restoring Juniper Encroached Grasslands

Hannah Atkinson, Tarleton State University, Houston, TX, USA
Jeff Breeden, Tarleton State University, Stephenville, TX, USA
David Johnston, Tarleton State University, Comanche, TX, USA
Chloe Delahoussaye, Tarleton State University, Houston, USA
Liliana Navar, Tarleton Student Chapter of The Wildlife Society, El Paso, TX, USA

Abstract: Grasslands comprise 20 to 40 percent of earth's ecosystems and are declining globally. Grasslands provide essential ecosystems services, are carbon sinks, and provide habitat for a plethora of wildlife species. Woody plant encroachment transitions grassland ecosystems to shrublands, impacting soil health and altering plant and wildlife species composition. Within central Texas, overgrazing, fire suppression, and urban expansion has enabled native Ashe Juniper to expand beyond its historical niche and encroach on grasslands. Encroachment of Ashe juniper into these grasslands ecosystems results in a monocultural landscape through the reduction or elimination of herbaceous layer biodiversity. This loss of native deep-rooted grasses impacts grassland hydrology, decreasing surface water percolation, resulting in increased surface water runoff and erosion. Ashe Juniper monoculture is limiting to the availability of forage, browse, and habitat for wildlife and livestock, creating an understory comprised of few fibrous rooted plants. Here, we investigate the efficacy of minimizing soil disturbance during juniper removal and subsequent reintroduction of native grasses using early successional silver bluestem seeded directly into juniper duff for prairie restoration. We hypothesize that silver bluestem can germinate and thrive in juniper duff piles, restoring the herbaceous grass layer and increasing surface water percolation.

25. Spatial Patterns of Canid Diet and Maternal Haplotype Groups in South Texas

Bianca Ramos, St. Mary's University, San Antonio, TX, USA
Melissa Karlin, St. Mary's University, San Antonio, TX, USA

Abstract: Red wolves (Canis rufus) are a critically endangered species native to the eastern United States, but despite conservation efforts, their population size has declined. In recent years, it was discovered that coyotes (Canis latrans) in the region of Galveston Island, TX retained red wolf alleles thought lost in the captive-bred population, meaning the two species had hybridized in the past. This project is currently analyzing the diet of canids (coyotes and unknown hybrids) in the Galveston region of Texas and assessing the spatial distribution of their

diet components. Canid scat samples were collected around the Galveston Island, TX region and are being analyzed through DNA extraction, PCR amplification, and sequencing to determine the maternal haplotypes of canids and identify the prey item(s) consumed. The scat samples are also being analyzed in ArcGIS Pro in order to better understand the spatial distribution of these canids and determine whether there are any patterns in prey items, landcover type, and maternal haplotype of the source canid.

26. Utilization of the Hunt Trap Method to Investigate the Small Mammal Community in an Upland Pine Stand

Leo Montano, Stephen F. Austin State University Student Chapter of The Wildlife Society, Humble, TX, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Gage R. Grantham, Stephen F. Austin State University Student Chapter of The Wildlife Society, Nacogdoches, USA

Abstract: Small mammals are important components in forest ecosystems as they can affect successional and vegetation patterns through their occurrence, diets, and behaviors. In turn, small mammals can serve as biological indicators of ecosystem quality. Our goal was to test the effectiveness of the Hunt Trap method in detecting the small mammal community of an upland pine stand. This trapping technique provides a noninvasive methodology for sampling small mammal communities. We deployed nine baited Hunt Traps in the Stephen F. Austin Experimental Forest in Nacogdoches, Texas. Inside the Hunt Trap, we used a Reconyx HyperFire programmed camera to take a burst of three pictures when motion is detected, with a one-minute delay before the next detection. Cameras were deployed to record data during March 2023 (31 days) to observe small mammal occurrences to determine daily activity periods and the CPUE for any potential detections. Two species (Neotoma floridana and Peromyscus spp.) of small mammals were detected. The observed species in the genus Peromyscus were grouped due to the inability to differentiate between species. Nine non-target species were also detected. Results highlight that small mammal activity periods were greatest from hours 0000 to 0600 and CPUE results showed the highest was Peromyscus spp., while the lowest CPUE was Neotoma floridana. Our findings suggest that the Hunt trap method can be utilized to evaluate small mammal in upland pine stands. With further implications of this method management personnel and researchers can observe species communities to assist in planning future management practices.

27. White-Tailed Deer Spatial Ecology in an Agricultural Environment

Kaden Kerbow, Texas Tech University, Lubbock, USA
Charlie Newberry, Texas Parks & Wildlife Department, Austin, TX, USA
Courtney Ramsey, Texas Tech University, Lubbock, TX, USA
Kevin Mote, Texas Parks & Wildlife Department, May, TX, USA
Justin Foster, Brownwood, TX, USA

Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA

Abstract: Throughout the United States, wildlife species are influenced by many agricultural factors, including row-crop farming, which can affect prominent species such as white-tailed deer. Fragmentation from cropland conversion can shift the spatial ecology of white-tailed deer, thereby influencing life-history characteristics. Movement characteristics of white-tailed deer vary over the species' large geographic range; however, region-specific data is necessary for effective management, especially in areas of dense cropland where species-specific information is lacking. In the Rolling Plains of Texas, we GPS-collared ten (five female, five male) white-tailed deer and monitored their movements from November 2014 to March 2017. The mean home range size was 5.48 km2 (SD=2.91) via dynamic Brownian Bridge Movement models. On average white-tailed deer spent a moderate (7.5% ± 3.2; $\bar{x}$ ± SD) amount of time in agriculture but this varied by sex. Females spent more time in agriculture (10.4% ± 4.0) than males (5.1% ± 3.9). January and February had the greatest mean cropland use (35.7% ± 13.5) while June and July had the lowest cropland use (0.2% ± 13.5). Individuals generally remained <5 km from cropland throughout the year (3,000 m ± 2,761), a distance white-tailed deer can easily traverse multiple times a day. Females used areas closer to cropland (1,431 m ± 6,592) than males (4,239 m ± 5,341). Our results illustrate that spatial and temporal shifts in movement characteristics by white-tailed deer may be driven by row-crop farming in this region which could modify spatial-habitat relationships that can be used to determine future management efforts.

28. An Assessment of Bird Building Collisions on the University of Texas at San Antonio's Main Campus

Salma Akhrass, University of Texas at San Antonio, San Antonio, TX, USA
Jackson Kinder, University of Texas at San Antonio, San Antonio, USA
Jaden Monk, University of Texas at San Antonio, San Antonio, TX, USA
Laura Salazar, University of Texas at San Antonio, San Antonio, TX, USA
Abigail Schloemer, University of Texas at San Antonio, San Antonio, TX, USA
Idalia Tarin, University of Texas at San Antonio, San Antonio, TX, USA
Alexis Baum, University of Texas at San Antonio, San Antonio, TX, USA
Jennifer Smith, University of Texas at San Antonio, San Antonio, TX, USA

Abstract: Bird-building collisions are a top cause of bird mortality in the United States (US). Because San Antonio, Texas is located prominently in the Central Flyway, incidences of bird-building collisions are anticipated to be high, especially during migration when the number of birds is elevated. Despite these ideas, assessments of bird-building collisions in San Antonio are limited. In response to this missing gap in knowledge, we recorded the presence of bird-building collisions on the main campus of The University of Texas at San Antonio (UTSA) in 2019, and from January 2021 through December 2023 taking a semi-systematic approach with emphasis on Spring and Fall migration. We documented 107 birds from 28 species of which the majority (23 species) were migratory and five are currently considered Species of Greatest Conservation Need (SGCN) in Texas. Nashville Warbler (Leiothlypis ruficapilla; 14), Orange-

crowned Warbler (Vermivora celata; 11), and Lincoln's Sparrow (Melospiza lincolnii; 10) were the most commonly detected species. In support of our prediction, the majority of collisions occurred during migration (September and October - 71.96%; April - 11.21%). While bird building collisions occurred throughout campus, two hotspots were revealed; we suggest that trees nearby serving as roosts coupled with large windows may have elevated collisions at these locations. Future research incorporating year-round, systematic surveys coupled with analysis of landscape features will be used to evaluate these ideas. Results from this ongoing study will be provided to UTSA to encourage adoption of mitigation methods that decrease bird-building collisions on campus.

29. Estimating the Proportion of Northern Pintails Available to be Surveyed During the Annual North American Waterfowl Breeding Survey

Brianna Garza, Texas A&M University - Kingsville, Rio Grande City, USA
Joseph McGovern, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kevin Kraai, Texas Parks & Wildlife Department, Canyon, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Bart Ballard, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Different techniques to estimate animal population parameters can provide differing and sometimes opposing results. These differences must be accounted for, particularly when used for management. For example, aerial surveys are used to estimate abundance and distribution of breeding waterfowl using densities along transects and extrapolating to the larger target regions located within Western Dakota and Montana. While these surveys efficiently estimate interannual variability in population distributions they do not explicitly capture highly dynamic settlement patterns which greatly influence population estimates. Northern pintail (Anas acuta) breeding distributions depend heavily on highly ephemeral wetlands, therefore exhibit great annual variability. Our goal is to understand the proportion of pintails within the survey area during the time of the North American Waterfowl Breeding Population and Habitat Survey. We deployed GSM/GPS tracking devices on 665 female pintails wintering throughout central and western wintering regions of North America (TX/LA Gulf Coast, TX Panhandle, NM, AZ, and CA) during 2020-2023. Of those marked birds, 244 birds reached their respective breeding areas, providing us adequate data to use in our analysis. We will use a nonparametric analysis to assess whether the daily number of pintails per unit area in each survey stratum is similar to that of non-surveyed areas within the Prairie Pothole Region. We will similarly compare the number of birds within the belt transects available during the survey period to that within the target survey area. These comparisons will provide insights into the efficacy of the breeding survey for northern pintails and potentially refine population estimates.

30. Spatial and Temporal Responses of Small Cats to the Presence of Big Cat Species in Central Botswana

Will Stephens, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Spring Branch, TX, USA
Daniel Scognamillo, Kingsville, TX, USA
Michael Tewes, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: As wild cat population trends steadily decline due to habitat loss and ever-growing human-wildlife conflicts, there is great need for conservation of these species. Wild cat populations should be studied on both public and private land to gain a deeper understanding of challenges they face and ways their population numbers could be boosted. We examined the spatial and temporal overlap in the populations of big and small cats on the Central Kalahari Game Reserve (national park) and a privately owned, high-fenced hunting property using camera traps. From March to June of 2023, we deployed 2 cameras at each of 104 different sites, with 52 sites per property. Photos were categorized by species and number of individuals using the program Timelapse, and then exported to an excel file for analysis. The high-fenced Bokamoso property experienced about half as many detections as the Central Kalahari Game Reserve. Caracals (Caracal caracal), servals (Leptailurus serval), and cheetahs (Acinonyx jubatus) appeared to avoid areas where lions (Panthera leo) and leopards (Panthera pardus) are present on both properties. However, the African wildcat (Felis lybica), the smallest species of interest, tended to stay within the area. When similar species avoid one another, it produces a healthier coexistence by reducing competition among species.

31. Ocelot Dispersion and Guzzler Use on Laguna Atascosa National Wildlife Refuge

Hunter Vasquez, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Harlingen, TX, USA
Daniel Scognamillo, Kingsville, TX, USA
Michael Tewes, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Ocelot (Leopardus pardalis) conservation at Laguna Atascosa National Wildlife Refuge faces challenges related to man-made water sources (hereafter ‘guzzlers’), which maintain consistent encounters with ocelots for research. Guzzler maintenance was historically managed by interns; however, due to budget constraints and the COVID-19 pandemic, maintenance ceased. Cluster camera surveys to refine the ocelot population estimate were initiated in early summer 2023 and consistent ocelot encounters have been observed at the refuge’s water guzzlers. Notably, 3 frequent visitors (2 males, 1 female) were identified at one guzzler and 2 additional females were observed at another. Inspired by these findings, cameras were placed at all 13 guzzlers to capture additional instances of ocelot activity, with data collection underway. During camera checks, we observed that some guzzlers appeared dry or clogged. This lack of maintenance was concerning because non-functioning guzzlers may discourage ocelot use. Recently, there have been renewed efforts to maintain guzzlers through volunteer initiatives. Our research aims to provide data on guzzler utilization by ocelots and raise awareness about the importance of guzzlers for ocelot conservation. Examining the connection between guzzler water availability and consistent ocelot visits, potentially highlighting the correlation between ocelot encounters and areas with functioning guzzlers. Our study further investigates how guzzler condition affects ocelot dispersal and explores the impact

of supplemental water sources on home range expansion, survival during dispersal, and connectivity between dispersal areas. Our research contributes essential information to understanding ocelot behavior around guzzlers and their role in ocelot dispersal, emphasizing their significance for conservation efforts.

32. Winter Site Fidelity of Female Northern Pintails Using High-Resolution GPS Data

Brianna Garza, Texas A&M University - Kingsville, Rio Grande City, USA
Joseph McGovern, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kevin Kraai, Texas Parks & Wildlife Department, Canyon, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Bart Ballard, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Site fidelity is a phenomenon observed in a broad array of species, particularly those that migrate. Some shorebirds return every year to the same nest cup and wintering site, whereas some finches are entirely nomadic, following highly dynamic resources across their range. Waterfowl fall somewhere in the middle of this spectrum. In North America, the northern pintail (Anas acuta) shows highly-variable winter-site fidelity. However, much of our knowledge on winter site fidelity relies on band recoveries, which are hindered by often very low recapture rates. Automated tracking devices that use the cell phone network (GSM) or satellites allow continuous tracking of animals. These devices provide valuable new insight into distributions of animals across seasons. Using this technology, we seek to better understand winter site fidelity of the highly mobile northern pintail. We deployed GPS/GSM tracking devices on 665 female pintails wintering in the Gulf Coast, Playa Lakes Region, and the Southwest U.S., and a total of 69 individuals returned to wintering areas the year following deployment. We will assess different levels (spatial scale) of winter site fidelity of pintails using Bhattacharyya's Affinity Index to measure degree of overlap of utilization distributions across successive winters, as well as Euclidean distance between centroids of home ranges between winters. We expect low site fidelity birds captured in dryer areas (Playa Lakes, Southwest), but higher fidelity in birds returning to the coastal regions (Texas Coast, Louisiana), due to the latter region's general overall stability in wetland availability relative to the former.

33. Endoparasite Occurrence in Sympatric Bighorn Sheep and Aoudad in the Trans-Pecos Region of Texas

Seth Hawke, Texas Tech University Student Chapter of The Wildlife Society, Lubbock, TX, USA
Courtney Ramsey, Texas Tech University, Lubbock, TX, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA

Abstract: Population decline of desert bighorn sheep (Ovis canadensis nelsoni) in the Trans-Pecos ecoregion of Texas is a subject of burgeoning concern for wildlife biologists. In many parts of their range, much of this decline is in part caused by mortalities and reduced

recruitment from exotic pathogens originally introduced to free-ranging ungulates by domestic livestock. Additionally, aoudad (Ammotragus lervia), an invasive Caprid originating from Africa, may facilitate the spread of pathogens that can cross species barriers, such as certain endoparasites. Determining parasite species presence and abundance in sympatric bighorn and aoudad using techniques such as fecal egg counts (FEC) is the first step in exploring this possibility. We used the modified McMaster technique, which is the most commonly utilized method to quantify parasite load in ruminants, and the Wisconsin technique to quantify parasite presence. Fecal samples were obtained from 22 bighorn and 13 aoudad captured in the Black Gap Wildlife Management Area and Big Bend Ranch State Park in October-November 2023, where 82% of bighorn samples and 54% of aoudad samples contained at least one species of endoparasite. Three genera were detected in both bighorn and aoudad combined, where Ascaris ovis, a form of roundworm, and other ascarids were frequently observed in both species. Other parasites observed in both bighorn and aoudad included Eimeria spp. and strongyle-type species. These preliminary results support the notion that a larger, more comprehensive study of gastrointestinal parasite occurrence in these species may be warranted, especially as aoudad densities continue to rise.

34. Effect of Weather and Urbanization on the Activity of Virginia Opossums in the US

Sarah Barnes, Texas State University Student Chapter of The Wildlife Society, Kingsland, TX, USA
Sarah Fritts, Texas State University, San Marcos, TX, USA
Madison Vasquez, Texas Chapter of The Wildlife Society, New Braunfels, TX, USA
Adriana Puzon, Texas State University, Cypress, USA

Abstract: Urbanization affects wildlife, but each species reacts differently to urbanization. Research has found that mesopredators avoid highly urbanized areas while benefiting from urban resources simultaneously. Additionally, studies show that Virginia opossums (Didelphis virginiana) are more active in areas with steady precipitation. With this in mind, we hypothesized that Virginia opossums would be more active in urban areas and areas with a higher mean precipitation. For the methodology, we used publicly available Snapshot USA data that gathered camera data from locations across the US. Our anthropogenic covariates included cultivated land and wild vegetation, and our weather covariates included precipitation and minimum temperature. The calculated p-values from our study were: 2019 mean precipitation (p=0.024), 2020 mean precipitation (p=1.01e-07), for 2019 wild vegetation (p=0.0001), 2020 wild vegetation (p=0.004), 2020 minimum temperature (p=3.28e-05), and 2020 cultivated land (p= 0.012). Based on our results, Virginia opossum counts are positively correlated with mean precipitation, minimum temperature, and cultivated land, and negatively correlated with wild vegetation. Suggested future studies would be how the activity of other mesopredators affects the activity of Virginia opossums.

35. Factors Influencing Diets of Wild Pigs

Hallie Halstead, Texas A&M University - College Station, College Station, TX, USA

Jeffrey Wiegert, Texas A&M University - College Station, College Station, TX, USA
Doug Tolleson, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M AgriLife Research, Sonora Research Station, Sonora, TX, USA
John Tomeček, Texas A&M University - College Station, Austin, TX, USA

Abstract: Wild pigs (Sus scrofa) are one of the most damaging invasive species worldwide, given their high reproductive potential, large size, and omnivorous diet. Their rapid expansion has increased concerns for disease transmission, impacts on agriculture production, and effects on ecosystems. If not properly managed, wild pigs could cause extensive, possibly irreversible, damage to native ecosystems. My goal is to document the diet composition of wild pigs in the Neches River Basin of the Piney Woods region of Texas seeking to make specific inference about factors influencing changes in diet among animals throughout the year to determine influence of environmental factors throughout each calendar season, determine influence of age and sex on diets, and determine the influence of parasite presence on diets. I am collecting a minimum of 10 specimens per season for sample collection of ectoparasites, feces, and stomach contents from each wild pig harvested. All samples will be processed in order to identify the abundance of parasites from each individual, identify items consumed, and abundance of each food type consumed. These findings will then be used for analysis to determine if any significant associations of any combined relationships exist. Understanding the feeding habits in combination with possible factors influencing those habits may increase the success of management plans. If any significant correlations can be found, these results can be implemented into the timing of management efforts across the area creating more efficient success for those wanting to decrease and manage wild pig populations to reduce ecological and economic impacts.

36. Fire Suppression Chemicals: Use, Effectiveness and Perceptions The Testing of EarthClean TetraKO™

Alli Cottrell, Texas A&M University - College Station, College Station, TX, USA
Doug Tolleson, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M AgriLife Research, Sonora Research Station, Sonora, TX, USA

Abstract: Wildland fire suppression chemicals (defined as any additive to water used to improve effectiveness as an extinguishing agent such as foams, retardants, and water enhancers) have a long history of use in wildland firefighting. Since their introduction in the 1930s, phosphate-based chemicals have been utilized in wildfire suppression strategies. In recent years, 50 million gallons of chemical fire retardant have been used to fight wildfires annually. A major issue posed by the use of most suppression chemicals is their concentration and accumulation in the environment post-burn. The toxicity of common suppression chemicals has been well documented and known to cause harm to soils and waterways. With recent increases in fire activity and intensity, the demand for safer, more environmentally friendly suppression chemicals will rise. Newer “biodegradable” suppression chemicals, such as TetraKO™, advertise themselves as environmentally friendly alternatives to the phosphate-based agents commonly used today. In this study, we test TetraKO™, a cornstarch-based

product, under four replicated application conditions to evaluate its effectiveness and performance. We hypothesize that TetraKO™ will stop the advance of fire more often than water alone, even after a drying period. Additionally the non-toxic component reduces post-burn negative impacts on the environment from suppression operations. Perceptions of wildland fire suppression chemical use may be drastically improved if “safe”, “eco-friendly” products were highly effective as control lines and water additives for suppression. Pending the results of this study, a successful performance of biodegradable suppression chemicals would make a new tool available to land managers, particularly in sensitive ecosystems.

37. Illuminating Painted Bunting breeding season diets at Lewisville Lake Environmental Learning Area using fecal eDNA metabarcoding

Haley Daniels, University of North Texas, Carrollton, TX, USA
Alejandra Gage, University of North Texas, Denton, TX, USA
Lindsey Davis, University of North Texas, Denton, TX, USA
James Bednarz, University of North Texas, Denton, TX, USA
Zacchaeus G. Compson, University of North Texas, Denton, TX, USA

Abstract: Of the two breeding populations in the United States, the western Painted Bunting (Passerina ciris) population is comparatively understudied. As this species’ populations are declining, gaining a more comprehensive view of habitat requirements on breeding grounds is needed. Specifically, we aim to evaluate the diet of Painted Buntings breeding in North Texas at Lewisville Lake Environmental Learning Area (Denton Co., TX) to illuminate the food resources needed by this population. Painted Bunting diets were last analyzed over 100 years ago using lethal sampling methods, whereas technological advances now enable use of non-invasive methods, like fecal eDNA metabarcoding. Despite growing interest in this approach, it has been used relatively infrequently for birds compared to mammals. We non-invasively collected feces from Painted Buntings across all three periods of the 2023 breeding season (pre-nesting, breeding/nesting, and post-breeding) for diet analysis. We predicted that more arthropods are consumed during the breeding season, a pattern that would be most pronounced in females, and that during the post-breeding period more seeds would be found in the diet. This diet assessment will not only expand and refine foundational information for this species, but also provide invaluable habitat use data for the management of Painted Buntings in Texas.

38. Evaluating the Effect of Origin and Super-Stocking Methods on the Genetics of Eastern Wild Turkey

Clarissa Molina, University of North Texas, Allen, TX, USA
Andrew Gregory, University of North Texas, Denton, TX, USA

Abstract: In the early 1900’s, wild turkey populations were nearly extirpated from North America due largely to unregulated hunting. Even after the implementation of hunting restrictions, Eastern Wild Turkey (Meleagris gallopavo silvestris) populations in eastern Texas struggled to recover. The Texas Parks & Wildlife Department has recently adopted a novel

translocation strategy known as super-stocking that involves simultaneously releasing ~80 wild birds of mixed origin at each site. According to preliminary data, birds sourced from Texas represented 61% of total super-stocked birds, Iowa represented 8.7%, and nine other states accounted for the remaining 30.3%. Our aim was to determine if super-stock sources exert influence on the current genetic diversity of M. silvestris in eastern Texas. According to anecdotal evidence, birds trapped in some states may be contributing more to the current population of M. silvestris than others and the genetic composition of a super-stocked population may influence its ability to establish in an area. Genetic analysis will be performed on eDNA samples from contemporary and release populations to determine the genetic contribution of each source to the current population. Our findings will inform the selection of future super-stocking sources and improved land management practices that facilitate dispersal, survival, and reproductive success.

39. Response of Female Northern Pintail to Thermal Variation During Spring Migration

Joseph McGovern, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kevin Kraai, Texas Parks & Wildlife Department, Canyon, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Bart Ballard, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Dynamic climatic conditions during spring migration add additional costs to birds already under selective pressure to maximize fitness by optimizing time and energy. Increasing metabolic rate due to cold or hot temperatures adds physiological costs. Energy expended to respond to these costs can further compound energetic stress throughout daily and seasonal movements. Compounding energetic costs have implications for subsequent fitness. Under predicted climate change, increasing incidence of extreme weather events and warming trends will increase the importance of temperature variability during migration as a dynamic energetic factor. The northern pintail (Anas acuta) arrives earlier than most ducks to breed in the Prairie Pothole Region, likely pushing its thermal limits. However, pintails also show shifting migration phenology related to spring warming trends. Our first objective is to model how female northern pintails respond to temperature-induced metabolic costs via their activity patterns during spring migration at hourly, daily, and seasonal scales. We then will predict the effects of climate change on pintails' migratory activity budgets at multiple scales. Female pintails wintering in the US Gulf Coast, Playa Lakes and Southwest Regions were fitted with GSM GPS/ACC transmitters from 2019-2023. Under a generalized additive modeling framework, we will determine the relationship between temperature-linked existence metabolism and overall dynamic body acceleration (ODBA) given the interaction of spatial, temporal, and demographic covariates. This multi-scale approach will provide a more mechanistic understanding of

waterfowl migration energetics in relation to climatic conditions, and will be informative for waterfowl management under future climate change.

40. Space Use, Movement, and Survival of Translocated Desert Bighorn Sheep in Sonora, Mexico

Dylan Stewart, Texas A&M University - College Station, College Station, TX, USA
E. Alejandro Lozano-Cavazos, Universidad Autónoma Agraria Antonio Narro, Saltillo, Coahuila, MEX
Stephen Webb, Texas A&M University Natural Resources Institute, College Station, TX, USA

Abstract: Mountain sheep abundance across North America has declined >60% from historic times. In response, state and federal agencies have conducted >1,000 reintroduction projects, translocating >21,000 bighorn sheep. Despite these efforts, ~50% of reintroductions are considered unsuccessful, leading researchers to stress the importance of post-release monitoring on the overall success of future reintroductions. Our objectives were to quantify space use, movement, and survival of translocated desert bighorn sheep (Ovis canadensis mexicana). We conducted our research in the Sierra El Alamo Mountains, ~45 km W of Caborca, in northwestern Sonora, Mexico. We captured and fitted 16 bighorn sheep (9 females, 7 male) with GPS collars, which collected 1 GPS fix every 3 hours starting in November 2023. We created monthly 95% Brownian bridge movement models (BBMM), calculated monthly distance travelled, and used the Kaplan-Meier methods to estimate survival. Monthly home range size for females was greatest in April (1,319 ha) and least in September (291 ha). Similarly, for males, home range size was greatest in February (1,533 ha) and least in October (513 ha). Cumulatively, movement was greatest from April through June (~49 km) for females and from February through April (~52 km) for males; movement was least in October and December for both sexes. Annual survival (November 2023 to November 2024) was 81% (13/16) for both sexes. Early post-monitoring data suggest the reintroduction effort was successful because annual survival was high, and reintroduced sheep joined herds with native sheep and settled into the study area quickly.

41. Movement and foraging ecology of south Texas mountain lions (Puma concolor)

Chloe Nouzille, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA
Randy DeYoung, Texas A&M-Kingsville CKWRI, Kingsville, TX
Jonah Evans, Texas Parks & Wildlife Department, Boerne, TX, USA
Dana Karelus, Texas Parks & Wildlife Department, Austin, TX, USA
Grant Harris, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Katherine McDaniel, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Anthropogenic structures, such as fences, walls, or highways, can have profound influences on wildlife populations via fragmented habitats, impeded movement, and genetic isolation. These structural barriers affect populations of large mammals worldwide, yet few studies have quantified barrier impacts. Such research is particularly pressing considering the construction of the ~1500km border barrier-system separating the United States and México. We will conduct one of the first evaluations of the potential impacts of the U.S.-México border barrier-system on movement and foraging ecology of a large carnivore, the mountain lion (Puma concolor). Objectives are to assess effects of the border barrier-system on 1) transboundary movements, 2) diet composition and kill rates, and 3) cause-specific mortality. We will capture at least 20 lions and fit them with GPS collars equipped with geofencing that initiates high-fix rates near the border. We will conduct integrated step selection and barrier behavior analyses to examine the effects of the border on selection and movement. We will quantify diet through kill-site investigations and DNA metabarcoding of scat samples. We will monitor survival and cause-specific mortality by conducting mortality investigations. The broader implications of this project are sizable, as Texas is the only state in the U.S. where mountain lions are not formally managed and considered non-game. Additionally, population trends have not been tracked and this population exists alongside a formidable anthropogenic barrier. By investigating the effects of the U.S.-México border on a wide-ranging carnivore, we can inform mitigation and management strategies locally and provide inference for at-risk carnivore populations globally.

42. Preliminary Field Data and Proposed Experiments for Evaluating Efficacy and the Detection Limits of Alligator Snapping Turtle (Macrochelys temminckii) Environmental DNA (eDNA)

William Lutterschmidt, Sam Houston State University, Huntsville, TX, USA
Kyra Woytek, Sam Houston State University, Huntsville, TX, USA
Cory Adams, USDA Forest Service, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Daniel Saenz, USDA Forest Service, Nacogdoches, TX, USA

Abstract: The alligator snapping turtle (Macrochelys temminckii) is a large freshwater turtle native to the southeastern United States. Due to declining populations across its range, the species is a candidate for listing as threatened under the Endangered Species Act. Its range extends into East Texas, but detailed information on its status in Texas is limited due to its cryptic behavior and low detectability. Environmental DNA (eDNA) analysis is a valuable tool in determining the presence of rare or cryptic species, particularly in aquatic environments. Previous efforts suggest that eDNA surveys may be a useful tool to detect alligator snapping turtles, but these studies were limited in temporal scope. Here we present preliminary field data for the first three-month sampling period of sites where alligator snapping turtles are known to

occur. These preliminary data will aid in evaluating the efficacy of eDNA sampling across a temporal scale, with the complete data set allowing for seasonal analyses. We also present proposed mesocosm experiments to examine how water quality within an aquatic system (e.g., flow rate, temperature, pH, and turbidity) may influence the detection efficacy of alligator snapping turtle eDNA. Controlled laboratory experiments will be used to evaluate detection limits as might be influenced by eDNA concentration and exposure to changes in temperature and pH. Results from this study will inform researchers on the potential utility and limitation for eDNA detection in monitoring alligator snapping turtles and other cryptic species.

43. Ocelot Reproduction and Kitten Survival in South Texas

Victoria Locke, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Reeves, East Foundation, San Antonio, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Estimation of vital rates, including reproduction, is critical to understanding complex population dynamics, particularly for small, declining populations. Ocelots (Leopardus pardalis) are a federally-listed species whose current range in the United States is restricted to two small, isolated populations in South Texas. Our proposed research will aim to elucidate three key data gaps for ocelots in the United States: (1) first-year survival rates of ocelots; (2) timing and frequency of ocelot reproductive events; and (3) drivers of ocelot den site selection, with the goal of informing an integrated population model (IPM) to guide ocelot recovery. We aim to place expandable radio-linked VHF (rVHF) collars on ocelot kittens to assess first-year survival. The kittens' rVHF collars communicate with the mothers' GPS collar periodically to update neonate status as nearby, absent, or deceased. These data will be analyzed in a Cormack-Jolly-Seber model in a Bayesian framework. Multivariate linear regression will be utilized to assess what factors (e.g., season, rainfall, vegetation cover, mother's age, mother's number of previous litters) affect reproductive timing and frequency. A resource selection framework will be applied to analyze what factors (e.g., patch configuration, vegetation composition, and human-related factors such as distance from road) influence den establishment, and if those factors differ, what influences overall habitat selection. Providing insights into first-year ocelot survival will directly inform an integrated population model to guide ocelot recovery in the United States. In addition, knowing what factors are associated with reproductive timing and den site selection will guide ongoing, large-scale restoration of Tamaulipan thornscrub.

44. Avian and Vegetation Response to Grassland Restoration in the Texas Cross Timbers Ecoregion

Catalina Berry, Tarleton State University, Laredo, TX, USA
Zachary Bellows, Tarleton State University, Stephenville, TX, USA

Ty Cosper, Tarleton State University, Killeen, TX, USA
David Johnston, Tarleton State University, Comanche, TX, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Woody and invasive plant encroachment in grasslands is a major cause of grassland bird population declines in North America. In the Cross Timbers ecoregion, Ashe juniper (Juniperus ashei), honey mesquite (Prosopis glandulosa), King Ranch bluestem (Bothriochloa ischaemum) and prickly pear (Opuntia spp.) convert native grasslands into dense shrublands and monocultures that are unsuitable for obligate grassland bird species such as grasshopper sparrows (Ammodramus savannarum). Our objective is to assess the impact of restoration on the avian community by comparing avian abundance and plant community composition, canopy cover, and density across time. Our study area is in Palo Pinto Mountains State Park in northcentral Texas. We will conduct vegetation surveys during April and September with fourteen 100m line transects using quadrat sampling for herbaceous species and the line intercept method for woody species for 3 years, including pre- and post-restoration. Bird surveys will be conducted for 4 periods/year using eight 20x100m line transects and 4 point counts spaced >200m apart for 3 years. We plan to remove woody and invasive species and reseed at an 8-ha upland section in early 2024. We have collected preliminary vegetation data in July 2023 and will collect preliminary bird data in early December 2023. This project will supplement an ongoing 8-year riparian restoration project at the state park, provide songbird habitat, improve surface water capture and nutrient cycling, and provide a demonstration site of cost-effective ecosystem restoration and land management practices.

45. Using Targeted Poisoning of Red Imported Fire Ants to Improve Texas Horned Lizard Habitat

Kira Gangbin, Texas Christian University, Fort Worth, TX, USA
Rachel Alenius, Texas Christian University, Fort Worth, TX, USA
Madison Upton, Fort Worth Zoo, Fort Worth, TX, USA
Diane Barber, Fort Worth Zoo, Fort Worth, TX, USA
Nathan Rains, Texas Parks & Wildlife Department, Cleburne, TX, USA
Mark Mitchell, Texas Parks & Wildlife Department, Mason, TX, USA
Dean Williams, Texas Christian University, Fort Worth, TX, USA

Abstract: The spread of red imported fire ants (Solenopsis invicta; RIFA) has frequently been cited as a factor contributing to the decline of the Texas horned lizard (Phrynosoma cornutum; THL). Two hypotheses for this are: 1) direct lizard mortality due to RIFA, and 2) displacement of THL's main food source, harvester ants (Pogonomyrmex spp.), by RIFA. A new third hypothesis suggests that the invasion of RIFA could be causing a decline in hatchling THL food resources, as their diet is mainly composed of small ant species. Many studies have attempted widespread treatment to eradicate RIFA; however, this could have unintended consequences for non-target ant species that THL depend on. Using a targeted application method, we sought to reduce

RIFA populations over the summers of 2022 and 2023 at four sites located at Mason Mountain Wildlife Management in central Texas, a locality with an ongoing THL reintroduction program. At each site, hot dog baits were placed 5 meters apart in 10x10 grids. At treatment sites, one teaspoon of Amdro (a common ant poison) was applied to baits with RIFA thirty minutes after placement. After Amdro was applied, baits were left for 30 minutes and then collected. Treatments were repeated monthly May – August. The effects of each targeted poisoning were evaluated using pitfall traps and ant abundance measurements from baits. Results showed no clear trends in RIFA and hatchling food abundance over time. This suggests that our minimal approach to targeted poisoning was not enough to significantly reduce RIFA activity at our sites.

46. Nutritive Value Dynamics and Strategic Supplementation of White-tailed Deer Browse Species in the Southern Cross Timbers and Prairies of Texas

Alex Pearson, Texas Tech University Student Chapter of The Wildlife Society, Lubbock, TX, USA
Shaelyn Rainey, Texas Tech University, Lubbock, TX, USA
Caitlyn Cooper-Norris, Texas Tech University, Lubbock, TX, USA
Nichole Cherry, Texas A&M AgriLife Research, Stephenville, TX, USA
Jhones Sarturi, Texas Tech University, Lubbock, TX, USA
James Muir, Texas A&M AgriLife Research, Stephenville, TX, USA
Aaron Norris, Texas Tech University, Lubbock, TX, USA

Abstract: In the Southern Cross Timbers and Prairies Region of Texas, white-tailed deer (Odocoileus virginianus) are both a recreationally and economically valuable resource. Though nutritional value influences selection, forage availability tends to be the major limiting factor of high-quality diet selection. Forage nutritive value and availability, however, varies among and within growing seasons, as well as among years. The intent of this work is to evaluate how commonly used supplementation regimens (i.e., whole corn, cotton seed meal, and alfalfa) affect the digestion of first and second choice browse species relative to no supplementation on a seasonal basis. Starting in January 2023, seasonal browse samples were collected from a ranch located near Cross Plains, TX. Browse samples of six different species (chittamwood, elbowbush, winged elm, post oak, live oak, and skunkbush) were collected from two different ecological sites, loamy bottomland and clay loam. Nutritional constituents of browse samples were determined, including crude protein, neutral detergent fiber (NDF), acid detergent fiber (ADF), lignin, and fat. Ruminal digestibility was estimated using in vitro true digestibility methodology (IVTDMD), with all species within an ecosite being incubated concurrently with each supplement. There was an interaction of species and season for NDF and ADF ($P < 0.01$), with both following the same relative trend within a species. There was an interaction of species and season, as well as an effect of supplement for IVTDMD ($P < 0.05$). Browse nutrient availability and IVDMD changed seasonally with the greatest digestibility and least fibrous constituents in the spring and summer.

47. Tree Species Identity or Forest Structure: Restoration Implications for Small Mammal Diversity in Southern Pine Forests

Gage R. Grantham, Stephen F. Austin State University Student Chapter of The Wildlife Society, Nacogdoches, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Kathryn R. Kidd, Stephen F. Austin State University, Nacogdoches, TX, USA
Reuber Antoniazzi, Stephen F. Austin State University, Nacogdoches, TX, USA
John Willis, USDA Forest Service, Auburn, AL, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA

Abstract: Industrial forest management practices converted historic native pine species forests (e.g., shortleaf pine [Pinus echinata]) to homogenous, high-density plantations consisting of native off-site species (e.g., loblolly pine [Pinus taeda]). Restoration efforts have been aimed at converting these sites back to historical upland pine forests utilizing species that were more commonly found in the site, which typically integrates one of two approaches: 1) a conversion strategy, which involves replacing off-site species with preferred historic pine species, but this approach can be fairly intensive and costly, or 2) the retention strategy which emphasizes forest structure over species identity and is more gradual and less intrusive on the landscape. However, the impact of each of these restoration strategies on small mammal diversity is not well understood. We sought to determine the relative strengths of two factors (pine species identity vs. forest structural characteristics) on an ecosystem service (support of biodiversity). Specifically, using Hunt camera traps, we recorded small mammal occurrences across six treatments that differed in tree species composition (monoculture forests of loblolly pine, monoculture forests of shortleaf pine, or mixed shortleaf-loblolly pine forests) and covariates that measure forest structure from two treatments (understory mulched or unmulched). We found that covariates describing forest structure was a stronger predictor of small mammal community composition (species richness and structure) as compared to pine species identity. These results suggest a retention, rather than a conversion, approach to restoration can still support biodiversity in forest ecosystems while achieving restoration objectives.

48. Effects of Prescribed Fire on Herbaceous Nearest-Neighbor Relationships

Forrest Fay, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Juan Elissetche, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Edcouch, TX, USA
Ethan Bennie, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Saint Joseph, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Weimin Xi, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Fire has played a crucial role in shaping and maintaining plant communities in Texas rangelands for centuries. However, the absence of periodic fire in fire-adapted ecosystems has

caused significant shifts in vegetation composition. While previous studies in rangelands have explored the impact of prescribed fire on various herbaceous vegetation aspects, there is a notable research gap regarding the effects of prescribed fire on relationships between nearest-neighboring plants. Our research addresses this gap by evaluating how different prescribed fire regimes, characterized by varied return intervals and burning seasons, influence interactions among herbaceous plants in the Gulf Coast Prairies and Marshes ecoregion of South Texas. Our study was conducted at the East Foundation's El Sauz ranch, where sixteen burn units (>200 hectares) were randomly assigned either winter, summer, or control (no burn) treatments at either short (3 years) or long (5 years) return intervals in 2016. We conduct six modified step-point transects per burn unit pre-burning, ~6, ~12, ~18, and ~24 months post-burning, and in control units concurrently. Transects capture ground cover, nearest herbaceous plant species, nearest rooted neighboring herbaceous species, and the distance between the two plants. Preliminary data indicate that significant positive associations are found more frequently during summer sampling than during winter sampling. Additionally, there is an increase in total significant positive associations in burn plots following fire. The research findings will provide insights for land managers, aiding in the development of precise prescribed burning prescriptions to meet specific management objectives.

49. Patterns of Microhabitat Use by Texas Tortoises in a Southern Texas Coastal Rangeland

Camryn Kiel, Texas A&M University - College Station, College Station, TX, USA
Toby Hibbitts, Texas A&M University Natural Resources Institute, College Station, TX, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Andrea Montalvo, East Foundation, Hebbronville, TX, USA

Abstract: Understanding habitat relationships at multiple scales aids in producing effective management recommendations for wildlife species. For example, macrohabitat associations can be useful in conducting species surveys across a broader geographic range, while assessing microhabitat associations examines more specific resource use and has utility in forming site management plans. Limited research exists on such relationships for the Texas tortoise (Gopherus berlandieri), a species listed as threatened in Texas, where it ranges in the southern portion of the state. Generally, Texas tortoises are known to use thornscrub grassland vegetation. However, thornscrub grassland is a broad term that does not describe the finer scale variation in vegetation class cover within this vegetation community across space. We attached radio transmitters to Texas tortoises and assessed their microhabitat associations on a coastal rangeland in southern Texas to determine more detailed patterns of resource use. We examined the vegetation cover types and overall canopy cover at 1m above ground used by

tortoises at the East Foundation's El Sauz Ranch in Kenedy and Willacy Counties. We collected microhabitat data at 253 tortoise locations, along with 2 random locations for each tortoise location (506 random locations) to compare microhabitat use to availability. Texas tortoises appear to use areas with higher overall canopy cover and woody vegetation cover than is generally available, although they exhibit use of a variety of vegetation cover types. These finer scale assessments of Texas tortoise microhabitat use are necessary to inform recommendations for management action throughout their range to support their conservation.

50. Microclimate Influence on Sound Propagation in a Woody-Grassland Mosaic

Laura Beck, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Austin, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Darren Proppe, Texas Parks & Wildlife Department, Dripping Springs, TX, USA
Sam Fuhlendorf, Oklahoma State University, Stillwater, OK, USA

Abstract: Sound plays a pivotal role in shaping animals' understanding of their environment and dictating their responses, particularly with regard to communication. The acoustic adaptation hypothesis posits that organisms structure their calls to optimize propagation within their local environment. Factors influencing transmission of sound in terrestrial landscapes include temperature, humidity, and vegetation structure. With the onset of climate change, these factors are undergoing shifts from their historical conditions, which may lead to changes in local soundscapes. Moreover, within the Great Plains, USA, significant alterations to abiotic conditions and ecosystem processes have led to woody plant encroachment (WPE) within grasslands, compounding changes in microclimate patterns across scales. It is likely that higher temperatures and increased woody vegetation structure are lowering the detectability of sounds and increasing attenuation rates. Thus, we sought to identify how variation in these factors are impacting sound transmission in a woody-grassland mosaic. Beginning in Fall 2023, sounds will be propagated and recorded along transects in grassland and juniper-encroached areas. Sound propagation will occur across four different temperature ranges to capture thermal variation across seasons. Experimental removal of woody vegetation will be conducted to quantify changes in propagation under simulated management scenarios. Vegetation structure will be measured along each of the transects before and after vegetation removal. Impacts of temperature, canopy structure, and the interaction of these two factors on sound transmission will be determined. Results will help highlight expected changes on soundscapes of the Great Plains within the auspices of WPE and climate change pressures.

51. Is Detectability of Texas Tortoises Affected by Time of Day or Temperature?

Saren Perales, CKWRI / TAMUK, San Antonio, TX, USA
Christin Moeller, Texas A&M University - Kingsville, Kingsville, TX, USA

Wraith Rodriguez, CKWRI / TAMUK, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Sandra Rideout-Hanzak, Kingsville, TX, USA

Abstract: Texas tortoises (Gopherus berlandieri) are a state threatened species in Texas that has experienced sharp declines in population number, and its distribution has become sporadic. Because of their decline, conservation agencies desire to enumerate remaining populations; however, low abundance and unknown detectability make this difficult. Therefore, we built a 2.4 ha enclosure, translocated 56 Texas tortoises into the enclosure, conducted weekly line transects during morning, afternoon, and evening from July – September 2023, recorded temperature and all tortoises observed, and calculated the percent of tortoises observed and their detectability from the known number of tortoises within the enclosure. No differences ($F_{2,49} < 0.55$, $P > 0.57$) were observed in number or percent of tortoises recorded, or detectability between the 3 time periods. Average detectability for Texas tortoises was 0.17. An inverse relationship, which was not affected ($F_{2,46} = 0.97$, $P = 0.39$) by time of day, was detected between number of tortoises observed and temperature ($F_{1,46} = 13.6$, $P = 0.0006$). Therefore, Texas tortoises could be surveyed anytime during diurnal hours, but it is recommended to survey during the coolest time of the day in summer months. Tortoises were most active when temperatures were <29 C (85oF).

52. Prevalence and Treatment of Mycoplasma in Texas Tortoises

Christin Moeller, Texas A&M University - Kingsville, Kingsville, TX, USA
Saren Perales, CKWRI / TAMUK, San Antonio, TX, USA
Wraith Rodriguez, CKWRI / TAMUK, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Paul Crump, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: The Texas tortoise (Gopherus berlandieri) is a threatened species in Texas whose population numbers and distribution have declined. A potential mortality factor of tortoises is upper respiratory tract disease (URTD), which is caused by bacterial species of the genus Mycoplasma. The disease causes a range of symptoms including nasal discharge, swollen eyelids, lethargy, and a general failure to thrive. Recent research suggests that these bacteria have a commensal relationship with their tortoise hosts but that additional stress on tortoises could alter their immune system, which can lead to infection. Our objectives were to collect serum and whole blood samples from Texas tortoises located in the Rio Grande Valley (N =

171) and in coastal southern Texas (N = 23) to determine the prevalence of mycoplasma via serology and PCR cultures, and to determine a protocol to treat mycoplasma symptoms in exposed Texas tortoises. We tested the recommended dosages and administration of tulathromycin and oxytetracycline, along with saline-injected symptomatic and healthy tortoises. We found a 33% (64/194) prevalence rate for mycoplasma among tortoises with no difference between areas of southern Texas. Titers ranged from 1:32-128. PCR was unable to detect bacteria in any tortoise. Neither antibiotic treatment improved the general health of symptomatic tortoises; however, handling appeared to exacerbate mycoplasma symptoms in tortoises, possibly to due to increased stress. It is important to determine disease prevalence prior to translocation efforts to avoid the undesirable consequence of introducing a disease to a novel population.

53. Linking Soil Moisture with Photosynthetic Activity with Very High-Resolution Imagery

Kimberly Tanguma, CKWRI, Laredo, TX, USA
Humberto Perotto, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Anthony Falk, Texas Native Seeds, Ceasar Kleberg Wildlife Research Institute, Kingsville, TX, USA
Doug Tolleson, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M AgriLife Research, Sonora Research Station, Sonora, TX, USA
Shad Nelson, Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources, Texas A&M University— Kingsville, Kingsville, TX, USA
Maria C Donato-Molina, Assistant Professor-Research , Dick and Mary Lewis Kleberg College of Agriculture and Natural Resources, Texas A&M University— Kingsville, Kingsville, TX 78363, USA, Kingsville, TX, USA

Abstract: Water plays a vital role in the overall performance of native rangeland species. Water stress due to drought causes stomata closure in plant species to minimize water loss and reduce leaves' photosynthetic rate. Limited soil water can affect productivity and have an impact on plant diversity. Limited water availability within plant species consequently has a negative effect on plant diversity, and overall native plant health. Further, limited water availability can result in lower forage quantity and quality, thus impacting domestic livestock and native wildlife as they compete for available plant resources. Overgrazing inhibits the growth of palatable plant species with high nutritional value which leads to stunted growth and plant stress. Plant stress can be observed through remote sensing platforms. Our objective is to use multispectral sensors on drones to monitor rangeland species and their spectral reflectance changes based on water availability. We plan to fly drones 50 m above ground level and acquire multispectral imagery for 3 species: Slender Grama (Bouteloua repens), Pink Pappusgrass (Pappophprum Bicolor), and Seacoast Bluestem (Schizachyrium Littorale) at the Texas Native Seeds fields at Texas A&M University- Kingsville during the 2024 growing season. Soil and leaf moisture sensors will be used to compare field collected data and aerial imagery. Plant tissue samples after each flight will help to determine the relationship between nutrient analysis and reflectance values from hyperspectral imagery. This study will provide new insights on the relationship

between soil moisture, nutritional content, leaf moisture, and reflectance values of native grasses in South Texas.

54. Exploring Temporal Variability in the Scale of Effect for a Declining Ground-Nesting Bird in an Anthropogenically Altered Landscape.

Caleb McKinney, Texas A&M University - Kingsville, Kingsville, TX, USA
Katherine Travis, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Leonard Brennan, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Humberto Perotto-Baldivieso, Texas A&M University - College Station, College Station, TX, USA
Ryan Luna, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
John McLaughlin, Lubbock, TX, USA

Abstract: In a rapidly changing and heterogenous world, organisms must often respond to multiple pressures at different spatial and temporal scales. The scale of effect can represent the scale at which a landscape variable has the strongest impact on the organism's response, and organisms are expected to have disparate responses to variables across different spatio-temporal scales. In semi-arid systems, resources and conditions frequently change in abundance, distribution, and severity based on, but not limited to, climatic patterns. Additionally, these systems have increasingly become altered by anthropogenic activity that may functionally alter the ecosystem. In South Texas, chestnut-bellied scaled quail (Callipepla squamata castanogastris; hereafter: "quail") populations have experienced distribution-wide population declines in recent decades. These populations are also cyclical in nature where the population will change dramatically annually in response to environmental factors. This large interannual variability can make determining what is driving long-term population trends difficult. Therefore, it is important to explore both population trends concurrently by exploring variation in the scale of effect across multiple temporal scales. We will use 38-years of quail abundance data collected from the Breeding Bird Survey and the Texas Parks and Wildlife Department's annual quail surveys, along with landscape data from the Rangeland Analysis Platform to assess variation in the scale of effect for landscape dynamics across a broad temporal extent (decades) within fine temporal grains (interannual variation). Results will illustrate the spatiotemporal dynamics of scale of effect within a landscape increasingly altered and fragmented by anthropogenic activity for a culturally important gamebird.

55. An Examination of Wildlife Characteristics Related to Risk of Entanglement in Mesh Products

Hannah Abelein, Tarleton State University, Stephenville, TX, USA
Ty Cosper, Tarleton State University, Killeen, TX, USA
Tanna Morquecho, Tarleton State University, Stephenville, TX, USA
Jie Huang, University of Texas at San Antonio, San Antonio, TX, USA
Fei Wang, Tarleton State University, Stephenville, TX, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Road infrastructure is expanding across the United States, and these construction projects typically involve a large volume of soil cut and fill. Contractors utilize erosion control products (ECPs) to reduce soil erosion and improve plant growth. These products include mesh erosion control blankets (ECBs) with the concern of potential entanglement to wildlife taxa; however, few studies have focused on determining the level of risk ECPs pose to wildlife. Specifically, few products have been evaluated for their risk of entangling wildlife. The objective of this review was to determine the physical characteristics of wildlife and the properties of mesh products that increase the likelihood of wildlife entanglement or mortality. We performed a review of studies and accounts referencing wildlife entanglement or mortality in ECBs and other mesh products. Previous studies and accounts have mainly involved snakes, followed by turtles, and including a few reports involving amphibians, lizards, birds, and small mammals. Several reports involved species listed as threatened or endangered. Body and limb size, mesh size and inflexibility, and animal behaviors have been found to be potentially important factors in the likelihood of entanglement. This review is part of a larger study that aims to provide the basis to test and rank materials and identify effective, biodegradable ECPs that reduce entanglement risk to wildlife.

56. Estimating Waterfowl Density and Species Richness using Autonomous Recording Units

Emma Weber, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Jordan Giese, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Rachel Fern, Texas Parks & Wildlife Department, Fischer, TX, USA
Bart Ballard, Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Sanctuaries (i.e., non-hunted wetlands) are important for waterfowl during the hunting season and have been shown to increase local waterfowl abundance and diversity. The Texas Coast Waterfowl Sanctuary Program, created by Texas Parks and Wildlife Department, strives to enroll private wetland sites to serve as waterfowl sanctuaries in areas with high hunting pressure. Traditional waterfowl survey techniques introduce potential biases and disturbance due to observer presence. Autonomous recording units (ARUs) have become increasingly

common in avian research, but have not yet been used to estimate density of waterfowl. Our objective is to develop a standardized protocol for estimating species richness and density of waterfowl using ARUs for eventual comparisons between sanctuaries and hunted wetlands. During phase 1, we performed playbacks along transects, recording climatic conditions and broadcasting a sequence of vocalizations from 10 waterfowl species and pure tones at varying distances from an ARU and human observer. Data collected from transects will be used to quantify acoustic modulation in wetlands and allow for corrections to estimated waterfowl density during future field deployment of ARUs. For phase 2, during winters ’23 and ‘24 we will deploy 60 ARUs in paired sanctuary and hunted wetlands at public and privately-owned properties along the Texas Midcoast. We will use BirdNET, a machine learning platform, to create a classifier which we will evaluate for accuracy and use to process field recordings. Our study will establish a protocol for passive acoustic monitoring of waterfowl in wetland environments and inform strategic placement of sanctuaries in future years.

57. Understanding Disease Transmission Dynamics in a Multi-felid System

Alexandria Hiott, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Wildlife disease mediated by the introduction of feral species can seriously impact resident animal populations. Understanding disease dynamics and potential spillover pathways is important to safeguard populations of conservation value. South Texas is the only location where federally endangered ocelots (Leopardis pardalis) exist within the United States. One population exists in proximity to an urban area where feral domestic animals, specifically, cats (Felis catus), are present, leaving ocelot populations exposed to potential disease spillovers. Ocelots in South Texas are habitat specialists and live in Tamaulipan thornscrub, but spatially overlap with bobcats (Lynx rufus), which are a generalist species that span urban and natural landscapes. This research will investigate the possibility that bobcats could spatially connect ocelots to domestic cats, which may act as disease reservoirs. Our focus is two-fold: (1) to determine the directionality of disease transmission using genomic assessment of a common feline virus (Feline Foamy Virus), and (2) to estimate contact rates of ocelots, bobcats, and domestic cats and infer disease transmission risk. We hypothesize that, due to known spatial dynamics, bobcats are the mediator species in disease transmission from feral cats to ocelots. A greater understanding of disease dynamics among ocelots and sympatric species is crucial to making management decisions relevant to ocelot recovery. Additionally, given the presence of feral cats worldwide, understanding the role of feral cats in disease transmission has global conservation implications.

58. Investigating Patterns of Alligator Nest Site Selection and Nest Depredation by Wild Pigs

Alyssa Freeman, Texas A&M University - College Station, Bryan, TX, USA
Jonathan Warner, Texas Parks & Wildlife Department, Port Arthur, TX, USA
John Tomeček, Texas A&M University - College Station, Austin, TX, USA

Abstract: Crocodilians worldwide are the subject of intense conservation efforts. Many species have declined, and/or been rendered extirpated or extinct. Others have experienced notable successes. The American alligator (Alligator mississippiensis) is often thought of as a significant example of successful crocodilian conservation and management practices. It is important to continue to understand and monitor the species as threats of habitat loss and invasive species are on the rise. Wild pigs (Sus scrofa) are one such invasive species that are a threat to ecosystems, biodiversity, and native wildlife populations. Wild pig populations are expanding across the United States. Depredation of alligator nests by wild pigs can negatively impact alligators, yet the patterns of this depredation and the impacts on alligator reproductive success are not understood. It is unknown how the probability of depredation by wild pigs varies in relation to different habitat characteristics and selection of alligator nest sites. I will assess habitat characteristics such as surrounding vegetation, distance to high human activity areas, salinity, and soil type as well as whether the nest was built on a bank, levee, ditch, open marsh, or island. Then I will assess if there is a correlation between the alligator nest habitat characteristics and depredation by wild pigs.

59. Are Native Grasses Pollinated by Insects?

Ethan Bennie, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Saint Joseph, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Anthony Falk, Texas Native Seeds, Ceasar Kleberg Wildlife Research Institute, Kingsville, TX, USA
Forrest Fay, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Juan Elissetche, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Edcouch, TX, USA

Abstract: Pollinators play a vital role in all terrestrial ecosystems. We know from prior research that they save the US economy an estimated 39.2 billion dollars every year by pollinating agricultural crops and reducing the need for mechanical pollination. They also sustain ecosystems by pollinating the vegetation, aiding in reproduction, which cannot be given a dollar value. However, we do not yet know the extent of all the plant species they affect. This study is aimed at filling information gaps regarding native grass pollination. We will be investigating the relationships that insect pollinators may have with native grasses of southern Texas. We have chosen to focus on ten native grass species which are widespread throughout the region and have a variety of flowering structures. We are conducting this study at the Texas Native Seeds facility in Kingsville, Texas. Plots of each focal species are established on bedded rows in

monotypic stands, and five individuals of each species were randomly chosen for observation. We are recording the duration of available pollen resources the native grasses provide, and which insects take advantage of these resources. Additionally, we are tracking the morphological changes of the grasses' inflorescences and determining whether various stages of inflorescence attract insect pollinators. Field observations have shown that rainfall might have a positive correlation to morphological changes and availability of pollen resources. Understanding the relationships of pollinators with the native grass pollen resources will allow us to better manage the native grasses to support them.

60. Owl Community Structure, Resource Partitioning, and Exposure to Second-Generation Anticoagulant Rodenticides.

Amaris Shammaa, Texas Tech University, SAN ANTONIO, TX, USA
Philip Smith, Department of Environmental Toxicology, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA

Abstract: As a taxonomic group, owls are some of the poorest understood avian species in North America due to their nocturnal behavior. Even less is understood regarding overlap, exclusion, or resource partitioning within multi-species owl communities. This is an especially relevant issue due to the widespread use of second-generation anticoagulant rodenticides (SGAR) and the frequency in which these compounds are implicated in secondary poisoning of raptor species. 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 Welder Wildlife Refuge and other areas. I will use passive audio monitoring (PAM) and call playback methods to locate areas occupied by owls, then use ground searches for nest locations and subsequent productivity monitoring, then conduct nesting habitat assessments and extent of overlap of owl species. Additionally, I will assess prevalence of exposure by owls to SGARs across protected and unprotected landscapes by collecting and comparing blood samples from captured adult owls and those submitted to regional wildlife rehabilitation facilities. By systematically collecting these combined data, a clearer understanding of the owl community structure, resource partitioning, and productivity within the coastal bend region of Texas can be obtained, along with an understanding of the distribution of occurrence and prevalence of SGAR exposure across the landscapes.

61. A Passive Integrated Transponder Tag Antenna Array for Tracking Small Mammals

Derek Malone, Texas Tech University, Lubbock, TX, USA
Clint Boal, U.S. Geological Survey Texas Cooperative Fish and Wildlife Research Unit, Texas Tech University, Lubbock, TX, USA
Russell Martin, Texas Parks & Wildlife Department, Canyon, TX, USA
Richard Stevens, Texas Tech University, Lubbock, TX, USA
Carlos Villalobos, Texas Tech University, Lubbock, TX, USA

Abstract: Although tracking technology has largely been miniaturized, size, weight, and battery lifespan are still limitations with both radio and satellite telemetry for small animals. These limitations can lead to poor spatial and temporal resolution of the data collected. To address these limitations, we have developed a passive integrated transponder (PIT) tag antenna array to allow us to continuously track the movements of small mammals within a one-hectare area with a 25-meter resolution, without the need for active data collection by a researcher. This PIT tag antenna array will be used in a pilot study to monitor Ord's kangaroo rats (Dipodomys ordii) before deployment on the Texas kangaroo rat (D. elator). To address concerns on the spatial resolution of our antenna array, we used the package SiMRiv in program R to simulate the movement of 1,000 kangaroo rats within a random 1 ha landscape and compared the home range size of the simulated true data and the data our PIT tag antenna array would have collected. We conducted a two-tailed t-test on the home range sizes and found that our PIT tag antenna array did significantly overestimate the size of the home range (0.12 ha) compared to the true simulated home range size (0.08 ha; $p < 2.2e-16$). We are currently conducting field trials with live animals and will report comparisons of real home range estimates of Ord's kangaroo rats using this PIT tag antenna array with our estimated home ranges with simulated data.

62. Comparative Analysis of Emerging Mayfly Diversity and Abundances and Their Role in Riparian Ecosystem Dynamics within the Upper Llano River Watershed: Implications for Rio Grande Wild Turkey Forage and Riverine Management Strategies

Joseph Richards, Texas Tech University, Boerne, TX, USA
Ian Mack, Texas Tech University, Junction, TX, USA
William Stewart, Texas Tech University, Lubbock, TX, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA
Annie Farrell, National Wild Turkey Federation, Edgefield, SC, USA
Jason Hardin, Texas Parks & Wildlife Department, Austin, TX, USA
Scott Longing, Texas Tech University Student Chapter of The Wildlife Society, Lubbock, TX, USA
Blake Grisham, Texas Tech University, Lubbock, TX, USA

Abstract: The Upper Llano River Watershed in Texas, comprising the South and North Llano Rivers (SLR and NLR) and their tributaries, is ecologically significant, yet faces challenges such as drought, water withdrawals, invasive species, and declining riparian habitat quality. These factors threaten the watershed and associated species, with possibly unequal impacts on the NLR, which experiences intermittent dry periods, unlike the perrenial flows of the SLR. The increasing frequency and intensity of water loss are particularly concerning for aquatic invertebrates, including mayflies (Ephemeroptera), whose dynamic seasonal hatches may be crucial nutrient sources for local species, including Rio Grande Wild Turkeys (RGWT; Meleagris gallopavo intermedia). This study aims to compare the abundance and species composition of mayflies between the two rivers as part of a broader investigation into total invertebrate forage available for the RGWT. We established two paired 40-meter transects at five sites, three on the SRL and two on the NLR. One transect was positioned in proximity to the river channel in

the riparian area and the second randomly placed in a nearby riparian-upland corridor. Each transect included three sticky traps, nine pitfall traps, and a 20-meter sweep net sample collected every 13-15 days, April – August 2023. Understanding seasonal emergence patterns of invertebrates across spatial and temporal scales can enhance our knowledge of river community dynamics. This information can assist with adjusting management strategies that maximize restoration ecology and will provide insight into the availability of ephemeral, explosive food sources for Rio Grande Wild Turkeys during critical life stages.

63. Insect Communities in Relation to Hydroperiod and Local Habitat in the Upper Llano River Watershed

William Stewart, Texas Tech University, Lubbock, TX, USA
Scott Longing, Texas Tech University Student Chapter of The Wildlife Society, Lubbock, TX, USA
Ian Mack, Texas Tech University, Junction, TX, USA
Joseph Richards, Texas Tech University, Boerne, TX, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA
Annie Farrell, National Wild Turkey Federation, Edgefield, SC, USA
Jason Hardin, Texas Parks & Wildlife Department, Austin, TX, USA
Blake Grisham, Texas Tech University, Lubbock, TX, USA

Abstract: There is a current lack of data on the foraging habits and diets of Rio Grande Wild Turkey (RGWT; Meleagris gallopavo intermedia) in the Edwards Plateau Ecoregion (EPE) of Texas, where RGWT densities and harvest rates are the highest. Invertebrates are crucial for RGWT nutrition and energetic needs during feather replacement and egg-laying, varying in abundance across regions. Our goal is to investigate the invertebrate communities in riparian and upland habitats of the Upper Llano River Watershed and evaluate available forage for RGWT in context of seasonality and abundance of invertebrates and RGWT, respectively. We established two 40-meter transects containing three sticky traps and nine pitfall traps at five sampling sites, three on the South Llano River and two on the North Llano River. One transect was positioned in proximity to the river channel in the riparian area and the second positioned at approximately 50-100 meters from the riparian transect in a designated riparian-upland corridor. At each transect we used a hand-net to collect 20-meter sweep net samples. Samples were collected every 13-15 days, April – August 2023. We are in the process of compiling data collected in 2023 to quantify and compare potential invertebrate forage for RGWT, including identifying samples among all collection techniques and developing a preliminary community matrix among season, sampling method, and transects. Our community-level data collected among habitats, season, and methods will provide a background assessment of biodiversity over time and space to compare to molecular data collected from RGWT fecal samples from a concurrent study.

64. Identifying Plant-Pollinator Networks Associated With Grasses in North-Texas

Isabella Szebelledy, Tarleton State University, Dublin, TX, USA

Abstract: Long-term studies show declines in global pollinator abundance and floral resources, necessitating efforts to improve conservation for pollinator-plant relationships at local scales. Likewise, grassland ecosystems have declined significantly in North America, leading to further vulnerability of pollinator communities. Although primarily wind-pollinated, grasses provide nesting structure and supplemental pollen when other floral resources are limited, particularly during drought. We seek to examine plant-pollinator interactions associated with grasses during early and late growing seasons to address the following objectives: (1) Quantify pollinator networks associated with a suite of native, commercially available in working lands during flowering periods in Texas, and (2) Assess pollen productivity and nutritive value at early and late flowering stages. We developed a randomized strip plot design at Texas A&M AgriLife Research and Extension Center in Stephenville, TX including five species of warm-season grasses: silver bluestem (Bothriochloa laguroide), indiangrass (Sorghastrum nutans), sideoats grama (Bouteloua curtipendula), little bluestem (Schizachyrium scoparium), and sand dropseed (Sporobolus cryptandrus). We collected data on soil, pollen, flower visitors, and floral characteristics. We monitored floral visitor activity through observational counts and vacuum collections every two weeks during the flowering period in the mornings when temperatures range between 10 and 33°C. We collected pollen at early and late flowering stages to assay measuring content on amino acids, proteins, non-structural carbon, nitrogen, proximate and fiber composition, fatty acids, and micronutrients. We seek to provide a baseline for understanding pollinator foraging interactions associated with grass and pollinator health and guide conservation efforts in Texas grassland ecosystems.

65. Greater Sandhill Crane Migratory and Population Connectivity as Indicated by Stable Isotopes and Microsatellites

Haley Ditzenberger, Texas Tech University, Lubbock, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Warren Conway, Texas Tech University, Shallowater, TX, USA
Blake Grisham, Texas Tech University, Lubbock, TX, USA
M. Cathy Nowak, Oregon Department of Fish and Wildlife, Union, OR, USA
Justin Russell, Oregon Department of Fish and Wildlife, La Grande, OR, USA

Abstract: Greater Sandhill Cranes (Antigone canadensis tabida) in the Intermountain West are currently managed as three separate populations: Central Valley Population (CVP), Rocky Mountain Population (RMP), and Lower Colorado River Valley Population (LCRVP). Data from >120 greater sandhill cranes equipped with platform terminal transmitters from CVP, RMP, and LCRVP indicate significant overlap among summer, migrating, and wintering locations. However, these data are limited by the geographic scale, price of transmitters, and other vital financial and logistical constraints. The goal of this study is to use molecular techniques to assess population overlap and migratory connectivity among the CVP, RMP, and LCRVP in the Intermountain West. Our objectives include 1) assess population and genomic overlap and connectivity using microsatellite markers, 2) assess if stable isotope signatures can be used to identify locations where populations overlap, and 3) compare molecular data to geospatial data

collected from tagged greater sandhill cranes. We hypothesize 1) significant genetic overlap exists among the CVP, RMP, and LCRVP in the Intermountain West and 2) population and genetic connectivity is maintained by flooded agricultural fields and managed wetlands on public and private lands. We collected the eighth secondary feather to extract microsatellites and isotopes from twenty-five captured greater sandhill crane colts and 356 adults from the CVP, RMP, and LCRVP, 2015-2023. Preliminary microsatellite data support our first hypothesis and we are currently quantifying the magnitude and uncertainty of genetic overlap in addition to completing objectives two and three.

66. Assessing Prescribed Burns For Tick Control In Coastal Marsh And Prairie Ecoregion Of Southern Texas

Rachel Walters, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Tickborne diseases present a growing threat in the United States, impacting both human and animal health. Methods to mitigate tickborne disease by controlling vectors in the environment can be logistically challenging and financially unfeasible. Prescribed fire, which is already utilized in many systems for vegetation management, presents a unique method to both manage functionality of systems while also reducing vector burdens in the landscape. However, its utility across different regions in the U.S. is questioned. Here, we assess the impact of prescribed fire on tick densities in the Coastal Marsh and Prairies ecoregion in southern Texas. We performed monthly surveillance using the drag method to sample across transects (750 m2) and around the perimeter of tree mottes, which typically do not burn under prescribed fire conditions due to insufficient fuel content. All tick species and life-stages (with the exception of eggs) were collected during surveillance efforts. We demonstrate tick phenology in southern Texas, with observed seasonal peaks among life stages (nymphs in late winter and spring, larvae in late spring and summer; adults in fall). Further, we document that prescribed fire is effective in reducing tick densities in rangelands where grass fuels are continuous. However, woody mottes may provide environmental refugia for ticks to persist in the landscape, thus, providing potentially infective ‘islands’ where vectors and reservoirs can converge. Understanding effects of prescribed fire on tick densities in heterogenous landscapes that burn unevenly is crucial for addressing specific management challenges posed by tickborne diseases in the region.

67. Changes in landscape structure after wildfire in South Texas

Dakota Moberg, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Humberto Perotto-Baldivieso, Texas A&M University - College Station, College Station, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Aaron Foley, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Abstract: Wildfires are an important natural disturbance and agent of change. Understanding changes in vegetation communities post-wildfire is important when identifying recovery pathways. In South Texas, USA, the Borrega Fire burned >21,000 ha in April 2022. Therefore, our goal was to understand the landscape dynamics pre- and post-wildfire to provide insight into rangeland recovery pathways. We used daily 3-m resolution satellite imagery and completed supervised image classifications on one image per month to quantify spatiotemporal changes in the vegetation distribution. Changes in four land cover classes were assessed: woody, non-woody, bare ground, and burned (when able to identify charred areas). The March 2022 pre-fire image consisted of 155 ha prescribed burned, 11,689 ha woody cover, 9,883 ha of non-woody, and 234 ha bare ground. Immediately after the wildfire, woody cover decreased by 93.6% and non-woody cover decreased by 69.5%. However, by March 2023, woody cover increased by 2.8% and non-woody decreased by 3.5% compared to pre-wildfire values. Additionally, we compared Normalized Difference Vegetation Index (NDVI) values of four classes: woody burned, woody non-burned, non-woody burned, and non-woody non-burned. We determined the NDVI values of woody burned remained low due to top kill and herbaceous growth within the understory. It is important to monitor fine-scale temporal changes that occur within vegetation communities post-wildfire because landscape recovery begins immediately after a wildfire event. Therefore, understanding recovery pathways is a key factor to implementing appropriate management methods because results have shown no apparent negative influences on the rangeland post-wildfire.

68. Community Structure of Freshwater Turtles Along a Fishing Pressure Gradient

Luke Micek, Stephen F. Austin State University, Nacogdoches, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
David Stewart, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA

Abstract: Understanding the role of natural (e.g., habitat gradients) and anthropogenic (e.g., fishing pressure) factors that affect the structure of ecological communities is critical to the development of conservation strategies. Turtles are amongst the most imperiled group of organisms in the world which has been attributed to habitat loss, alteration, as well as exploitation due to fishing pressure (both targeted and incidental). The goal of this project was to quantify freshwater turtle community structure in the context of ecological (i.e., in-stream habitat features) and anthropogenic (i.e., passive fishing gear) gradients. From June – October 2023, we surveyed for freshwater turtles at three study sites in east Texas: Alazan Bayou WMA

(unfished), the Attoyac River (fished), and Shawnee (unfished) for a total of 150 trap nights at each site. We captured fewer turtles at both fished study sites (i.e., Attoyac and Shawnee), compared to the unfished site (i.e., Alazan). Species composition at the Attoyac differed significantly from Alazan ($p = 0.024$) and Shawnee ($p = 0.006$), however, Alazan and Shawnee did not significantly differ from one another. We captured a greater number of turtles at locations with a higher percentage of submerged woody debris and reduced canopy cover. Higher surface water temperatures reduced turtle captures at the Attoyac and Shawnee study sites, while increased turtle captures at Alazan. Both the presence of passive fishing gear and the differences in habitat structure among our study sites appear to be contributing factors for the dissimilarities in freshwater turtle assemblages.

69. Investigating the Impacts of Sustainable Grazing Practices on Spiders in North-Central Texas Rangelands

Nadia Castanon, Tarleton State University, Stephenville, TX, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA

Abstract: Arthropods play an important role in maintaining ecosystems integrity through many services, such as pollination, nutrient cycling, pest control, and serving as prey items for other species of wildlife. Rangelands, identified as grazing landscapes where native vegetation is dominant, provide resources for arthropods, including spiders (Arachnida: Araneae), which exhibit top-down control by regulating herbivorous insect prey populations. However, overgrazing, pesticide use, and other unsustainable practices may impact the quality of habitat for spider communities in rangeland ecosystems. The purpose of our study is to determine the impact of grazing in North-Central Texas rangelands on spiders. Our objectives are 1) Quantify changes in vegetation communities in rangelands under differing grazing pressures, 2) Determine the relationship between grazing pressure, spiders, and their arthropod prey in Texas rangelands, and 3) Identify the best range management practices to promote occupancy and biodiversity of spider communities. We will establish 4, 0.4-ha fenced plots at Tarleton State University's Agriculture Center (Erath County) and Timberlake Biological Research Station (Mills County) under rotational grazing (1.0 head AUM) with adjacent ungrazed plots for comparison. We will sample vegetation using 1, 30-m transect via line-intercept method before and after grazing to measure cover, density, and height for each species. We will sample arthropods using a series of pitfall traps and vacuum sampling every 5-m and identify arthropods to lowest taxonomic unit. We hope to guide management practices to improve biodiversity and sustainability for spiders and other arthropods in Texas rangelands.

70. Estimating Site-Specific and Region-Wide Density of an Endangered South Texas Felid Using Spatially Explicit Capture-Recapture

James Helferich, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA

Daniel Scognamillo, Kingsville, TX, USA
Randy DeYoung, Texas A&M-Kingsville CKWRI, Kingsville, TX
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Accurate estimation of population size is critical to effectively manage endangered species. One endangered species for which comprehensive abundance estimation is lacking is the ocelot (Leopardus pardalis), the only neotropical felid with extant populations in the United States. While ocelots were once native throughout much of the state, habitat loss, fragmentation, and harvest have restricted their range to two fragmented populations in South Texas: the “ranch” population at East Foundation’s El Sauz Ranch, and the “refuge” population at Laguna Atascosa National Wildlife Refuge. To date, no comprehensive multi-site estimate of abundance nor estimate of region-wide density has been achieved. Our research will 1) compare the efficacy of spatially explicit capture-recapture (SECR) density estimation from camera traps and scat dogs within the “ranch” and “refuge” populations, and 2) determine relationships between ocelot density and landscape characteristics to extrapolate total density across the South Texas region. We anticipate the use of scat detection dogs will provide higher (and likely more accurate) density estimates than cameras but at a higher financial cost. We also predict that ocelot abundance within South Texas may be higher than previously thought when extrapolating to a regional scale. These findings will inform progress towards recovery goals as stated in the Species Recovery Plan and serve as a baseline from which to evaluate future population dynamics.

71. Density and Habitat Use if Feral Pigs in Palo Pinto

Ricky Garibay, Tarleton State University, Stephenville, TX, USA
Zachary Bellows, Tarleton State University, Stephenville, TX, USA
Cameron Starnes, Tarleton State University, Kyle, USA
Hemanta Kafley, Tarleton State University, Stephenville, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA
Darrel Murray, Tarleton State University, Stephenville, TX, USA

Abstract: Invasive wildlife can have significant ecological impacts on native species and ecosystems. They can outcompete native species for resources, alter habitats, and cause population declines in other species. Understanding invasive species is critical to managing a healthy and functioning ecosystem. Feral pigs (Sus scrofa) are an invasive species that cause significant ecological and economic damage to native ecosystems in the United States. We aim to determine feral pig density and habitat use within Palo Pinto Mountains State Park, Strawn, Texas, a new state park set to open in 2024. We implemented a game camera survey conducted from September to October 2023, which utilized over 400 trap nights. Our study used 20 randomized camera sites focused on riparian and forested habitat types. Each camera was positioned 51 cm above the ground, with a minimum distance of 250 meters between them. Our results will provide wildlife authorities with valuable insights to aid in their decision-making process regarding managing and controlling feral pigs in the upcoming state park.

72. Evaporative water loss and thermal preferences among three sympatric water snakes of the Brazos River drainage

Luke Marshall, Tarleton State University, Stephenville, TX, USA
Dalton Lawing, Tarleton State University, Stephenville, TX, USA
Jesse Meik, Tarleton State University, Stephenville, TX, USA
Paul Hampton, Colorado Mesa University, Grand Junction, CO, USA
Israel Prewitt, Bio-West, Round Rock, TX, USA
Ed Oborny, Bio-West, Round Rock, TX, USA

Abstract: Climatic factors such as environmental temperatures and aridity are key determinants of species distributions, and effective thermoregulation and desiccation tolerance are critical to species-specific physiological performance. Despite its relevance, studies that assess comparative physiological parameters remain limited for most groups. In the laboratory, we investigated rates of evaporative water loss (EWL) and thermal preferences in sympatric natricine snakes of the Brazos River, including the state-threatened Brazos water snake (Nerodia harteri harteri), endemic to the middle stretches of the river system. Although results are preliminary, we detected species-specific differences in both EWL and thermal preferences. After controlling for mass, EWL was highest in the blotched water snake (N. erythrogaster) and lower in both the diamond-backed water snake (N. rhombifer) and the Brazos water snake, which were similar in their rates of EWL. In contrast, both blotched water snakes and diamond-backed water snakes showed similar thermal preferences that were warmer on average than those measured for Brazos water snakes Brazos water snakes, although individual variation in measurements was high. Differences in these ecophysiological parameters are expected to correspond to differences in habitat use and could shed light on present-day abundance and distribution of Brazos water snakes, as well as inform future management priorities.

73. A Range-Wide Hierarchical Abundance Model for Cagle's Map Turtle

Sarah Bullard, Tarleton State University, Stephenville, TX, USA
Isabella Lara, Tarleton State University, Stephenville, TX, USA
Brooke Beverly, Tarleton State University, Pottsboro, TX, USA
Alexander Murray, Tarleton State University, Stephenville, TX, USA
Jesse Meik, Tarleton State University, Stephenville, TX, USA

Abstract: Cagle's map turtle (Graptemys caglei) is a small emydid turtle that is endemic to the Guadalupe River drainage of south-central Texas and is currently listed as state-threatened. Limited research on the population status of Cagle's map turtle has been conducted in the 1990s and early 2000s, but with outdated statistical approaches, and current population assessments are needed. Moreover, hierarchical modeling approaches allow for simultaneous habitat assessment, providing additional insight into what, until now, has been considered paradigmatic habitat use for the species (e.g., association with Black Willow [Salix nigra] and avoidance of impoundments). The goal of our study is to evaluate distribution-wide abundance,

population structure, detection probability, and associated habitat characteristics of Cagle's map turtle using N-mixture models. Since June 2021, we performed multiple-pass count surveys of turtles along 58 unique transects of the Guadalupe, Blanco, and San Marcos Rivers for an approximate total of 764 river km surveyed. During the count surveys, we also collected environmental variables as covariates to inform our models. The information gleaned from this study will be valuable to wildlife management agencies, providing insight into the current population status, habitat use, and potential threats to this drainage-restricted species.

74. Effect of Chinese Tallow on Amphibian Community Ecology and Species Interaction in East Texas Forest Ecosystems

Caleb Mullins, Stephen F. Austin State University, Nacogdoches, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Daniel Saenz, USDA Forest Service, Nacogdoches, TX, USA

Abstract: Amphibian decline is a global phenomenon, with several declines resulting from the establishment of invasive species. Invasive plants, like Chinese tallow (Triadica sebifera), can alter chemical and physical habitat features, influencing decomposition and nutrient dynamics, and modifying the trophic structure of invaded ecosystems, which can have detrimental effects on amphibian populations. Much of the previous research focused on singular species effects, primarily examining how Chinese tallow leaf litter influences amphibian life history characteristics such as phenology, development, surfacing behavior, and survival. In essence, these studies revealed that changes in water chemistry from decomposing Chinese tallow leaves in aquatic settings effect various aspects of amphibian life history. Nonetheless, there is a notable scarcity of research investigating the impact of Chinese tallow in east Texas regarding its impact on amphibians and higher-level ecological occurrences such as community assemblage and species interactions. To address this gap, mesocosm experiments will investigate how environmental factors (Chinese tallow leaf fall timing, concentration, and temperature) impact water chemistry, amphibian growth, survival, and extend to higher-level ecological phenomena like predator-prey interactions, species competition, and community formation. Predator and prey arrival times, prey and competitor species size will be manipulated across various levels of the aforementioned environmental factors. These experiments will provide insights into amphibian community ecology and species interactions in the presence of Chinese tallow. Additionally, results from this study will help us understand the potential ecological impacts of climate-induced shifts in amphibian breeding timing and tree phenology, using East Texas species as model organisms.

75. Erosion Control Products and Wildlife Entanglement

Ty Cosper, Tarleton State University, Killeen, TX, USA
Hannah Abelein, Tarleton State University, Stephenville, TX, USA
Adam Mitchell, Tarleton State University, Stephenville, TX, USA
Fei Wang, Tarleton State University, Stephenville, TX, USA

Jie Huang, University of Texas at San Antonio, San Antonio, TX, USA
Heather Mathewson, Tarleton State University, Stephenville, TX, USA

Abstract: Erosion control products (ECP) are used widely in transportation projects along construction sites to retain soils during construction. These products are usually netting made from plastic or natural materials that remain in the environment as vegetation regrowth occurs. Entanglement of birds, fish, reptiles, and mammals in ECPs have been documented but little research has been done to quantify the risk of ECPs to wildlife. We will assess how different ECPs and the various stages of vegetation growth affect wildlife in a controlled experimental environment. Our hypothesis is that the risk of ECPs will vary as the environment changes from bare ground to denser vegetation. We will construct a wooden runway to measure wildlife response to ECPs and simulate vegetation at various levels of growth and density through placement of road whiskers in combination of ECP types. We will designate 5 species as candidates for study and monitor animal behavior as the individual moves across the ECP and through the whiskers. We will measure behavioral responses to the ECP (e.g., avoidance, digging below or moving above), and the time it takes to move from one end to another as proxy for impediment to movement. This study is part of a larger project which aims to increase understanding the risk of ECPs to wildlife in Texas and improve restoration efforts where anthropogenic disturbances influence wildlife-habitat relationships.

76. Informing Recovery: Current Genetic Status of Isolated Ocelot (Leopardus pardalis) Populations in South Texas

Tyler Bostwick, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Randy DeYoung, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Reeves, East Foundation, San Antonio, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Captive breeding and reintroduction programs have saved numerous wildlife species from extinction but rely on the availability of suitable stocks that are adapted to the local environment. For the ocelot (Leopardus pardalis), reintroduction efforts may be needed for this species to persist in the northern limit of its current distribution. [RWD1] There are an estimated < 100 individuals left in the United States in 2 isolated populations. The populations are stable but threatened by genetic drift, inbreeding, and stochastic events such as hurricanes. Suitable stocks for reintroduction exist in northern Mexico, but population monitoring efforts in the region are limited by concerns for human safety. Thus, captive breeding and reintroduction of the species to expand their range and introduce genetic variation has become an option for their conservation. To facilitate reintroduction efforts, we will index genetic diversity in captive and wild populations. Additionally, we aim to assess population divergence between zoo-sourced

and wild ocelots to aid captive breeding pair selection. We are analyzing genetic data collected from free-ranging ocelots in South Texas during 1991-2023 and zoo-sourced ocelot samples sourced from 25 zoos (with likely geographic origins of Brazil and North and Central America). We will use low-coverage whole genome sequencing to assess historical changes in population size, levels of inbreeding, and population structure. Preliminary results indicate that the two wild populations have low genetic diversity with limited gene flow amongst them. These wild populations may benefit from the introduction of new alleles from captive populations sourced from diverse geographic locations.

77. An Assessment of Fine Scale Microclimate Conditions in Purple Martin Artificial Housing and its Influence on Productivity

Lauren Spjut, Texas Tech University, Lubbock, USA
Daniel Greene, Weyerhaeuser Company, Columbus, MS, USA
Nate Smith, Texas Parks & Wildlife Department, Mountain Home, TX, USA
Rachel Clostio, The University of New Orleans, New Orleans, LA, USA
Elizabeth Sigler, The University of New Orleans, New Orleans, LA, USA
Wendy Tori, Earlham College, Richmond, IN, USA
Laurie Doss, Marvelwood, Kent, CT, USA
Andrea Montalvo, East Foundation, Hebbronville, TX, USA
Abe Woodard, East Foundation, Sarita, TX, USA
Jim Ray, Retired; Consulting USDOE Washington on migratory bird issues through a company named Project Enhancement Corp., Canyon, TX, USA
Joe Siegrist, Purple Martin Conservation Association, Erie, PA, USA
Blake Grisham, Texas Tech University, Lubbock, TX, USA

Abstract: Aerial insectivores are experiencing significant long-term population declines throughout their ranges. The eastern subspecies of Purple Martin (Progne subis subis) is particularly vulnerable as they are almost entirely dependent on provisioned artificial nesting cavities. The decline in Purple Martin populations emphasizes the importance of provisioned housing for the eastern subspecies and is crucial to the long-term conservation of the species. Our goal is to better understand the influence of microclimate (defined as temperature and relative humidity conditions inside artificial cavities) on egg and chick survival across the range of the eastern Purple Martin among six different artificial housing types and 14 study areas across the eastern United States. Our objectives to reach our goal are: 1) assess microclimate among six unique house types without the presence of nests or birds and, 2) five–seven randomly selected artificial houses with active nests at each site, 3) compare internal microclimate conditions to external, ambient conditions within objectives 1 and 2, 4) conduct weekly nest status checks per Purple Martin Conservation Association's Project MartinWatch Citizen Science protocols. We collected approximately 1.9 million and 2.1 million temperature and relative humidity readings for objectives 1 and 2, respectively, March-August 2023. Preliminary analyses are in progress, and we will collect these data again in 2024. Our findings will enhance our understanding of Purple Martin artificial housing options and provide

quantitative data to maximize nest survival for this declining species across its entire distribution.

78. Variation of available browse for white-tailed deer and exotics by ecosite in north-central Texas

Alex Pearson, Texas Tech University Student Chapter of The Wildlife Society, Lubbock, TX, USA
Shaelyn Rainey, Texas Tech University, Deleon, TX, USA
Caitlyn Cooper-Norris, Texas Tech University, Lubbock, TX, USA
Aaron Norris, Texas Tech University, Lubbock, TX, USA

Abstract: Browse availability for white-tailed deer and exotics in Texas is central to understanding health, behavior, movement, and other factors crucial to optimum management. Knowledge of available feedstuffs within specific ecosites can provide a better understanding of necessary management practices, such as food plot additions and nutrient supplementation to support healthy populations. On a ranch near Cross Plains, TX, we are determining the quantity of browsable species within the edge of individual motts, as well as assessing browse diversity and quantity across ecosites. Additionally, we are working to estimate available browse produced by each species across seasons. To determine browse availability in 5 pastures, motts with browsable understory were mapped and circumference (m) of each mott was measured using ARC GIS. Random points were assigned to mott edges relative to mott proportions in each pasture. Thirty meter transects were stretched along the edge of motts at each random point and browsable plants along the transect were identified to species and tallied. Data were analyzed by ecosite to determine species diversity, density of individuals per species, and percentage of mott edge each species was estimated to occupy. In fall 2023, the Tight Sandy Loam 26-33" PZ ecosite had the most species present, with an average of 9 per transect. Quercus virginiana and Ulmus alata had the greatest quantity within species, though Celtis sp. were present in over 62 percent of transects. Continuation of this research will better support determination of browse quantities within ecosites and provide insight into habitat selection and utilization.

79. When Nature Calls: Acoustical Measures of Biodiversity and Naturalness in an Urban/Peri-Urban Landscape

Miranda Fields, University of North Texas, Aubrey, TX, USA
Andrew Gregory, University of North Texas, DENTON, TX, USA

Abstract: Recently, there has been much interest in using bioacoustics as a indicator of anthropic influence on urban green spaces to assess biodiversity/species richness within anthropic landscapes. This is because bioacoustics monitoring may be a very cost effective means to index the presence or vocal species on a landscape, or to determine the level of human impactedness of a landscape. We surveyed 7 urban sites in and around Denton Texas, a small – midsized city in northeast Texas. At each site we placed a wildlife acoustics micro

acoustic data logger for 5 to 7 days. Loggers were programmed to record for five minutes of every hour during that time. We then used the soundecology package from R programming to analyze the acoustic data to identify high frequency sounds likely to be associated with anthropic activities, and low frequency sounds typical of natural noise. We also evaluated bird species richness using Merlin Bird ID app at each site. Bird species richness varied from 12-16 per site and generally was higher at sites with less higher frequency (technophoinc) noise spectrum. Preliminary acoustic analysis of one of the sites already shows anthropogenic influence with higher average acoustic evenness score (AEVE= 0.58) and low average Normalized Difference Soundscape Index (NDSI= -0.089). While not surprising, these results do support the notion that we can use bioacoustics to evaluate the degree of human impactedness of urban greenspaces. This may prove to be a valuable tool for conservation and management of wildlife on anthropic landscapes.

80. Assessment of Parasitism and Associated Pathogen Prevalence in Free-Ranging Felid Populations in Southern Texas

Tiffany Pope, Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Ashley Reeves, East Foundation, San Antonio, TX, USA

Abstract: Parasites have varying physiological effects on their hosts including reduced nutrient absorption, decreased blood cell activity, and damage to host tissues. The impact of parasite burden can be compounded by other internal (e.g., genetic inbreeding) and external (e.g., environmental) factors. In southern Texas, two wild felids coexist: ocelots (Leopardus pardalis) and bobcats (Lynx rufus). Ocelots are endangered in the United States, and the remnant populations exhibit low levels of genetic diversity, while bobcats are more common across this region. Our objectives for this ongoing study are to determine parasite and pathogen prevalence of free-ranging ocelots and bobcats by evaluating endoparasite loads, ectoparasite use, and pathogen presence. Fecal flotation for identification of endoparasites was conducted on 48 felids (ocelots, n=17; bobcats, n=31) spanning four years (2019-2022). The most common intestinal parasites were Toxascaris leonina (roundworm) and Ancylostoma spp. (hookworm). Ectoparasites were identified from 69 felids (ocelots, n=26; bobcats, n=43) spanning 35 years (1985-1986, 2010-2012, 2019-2022). The most common ectoparasites were ticks (Dermacentor variabilis) and fleas (Pulex spp). Pathogen presence in the ectoparasites will be compared to pathogen presence detected in the host to provide insight surrounding transmission rates. Moving forward, ectoparasite and associated pathogen identification will be completed on additional species (coyote, white-tailed deer, and nilgai) in the study area to investigate ectoparasite host preference and community pathogen transmission factors. These findings provide a better understanding of the felid population’s susceptibility to parasitism and assist in planning strategies that aid in reducing or preventing transmission of parasites and infectious disease agents.

81. Evaluating the Effects of Grazing Practices on Forage Production, Nutrition, Diversity, and Soil Moisture in the Marfa Grasslands, Texas

Ty Goodwin, Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Silverio Avila-Sanchez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

Abstract: Grasslands comprise 20 to 40% of the world's surface and provide ecosystem services, such as water retention and purification, directly harvested goods, and carbon sequestration. However, grasslands are one of the most rapidly declining ecosystems in the world. Throughout the Anglo-American colonization in Texas during the 1800s, desert grasslands of the Trans-Pecos were subjected to livestock overgrazing and other improper agricultural practices. With increasing wildlife conservation values and extensive historic livestock operations, livestock grazing can enhance wildlife habitat and attain economic benefits. Rotational and continuous grazing systems modify rangelands and provide income for ranching operations. This project aims to identify and compare grass species abundance, annual forage mass production, accompanied soil moisture, and forage nutrition between a long-term rotational, continuous, and deferred grazing system in a desert grassland of the Trans-Pecos. Grasses were collected at the end of the 2023 growing season. Random stratified sampling was used to place 270 0.5 m2 plots in all grazing regimes but confined to two soil types (Marfa-clay-loam, and Musquiz-clay-loam). Volumetric soil moisture was taken at each plot with all other floristic data. We expect higher species diversity in the rotational pasture while more coverage by specific dominant species in the continuous pasture. We expect higher forage mass production in the rotational system depending on adequate prior precipitation. The results of this project will allow for grazing to be better used as a management tool to conserve and restore grasslands.

82. New and Old Technologies for Soil Erosion Control: Using Remote Sensing to Monitor the Effectiveness of Trincheras

Gray Hancock, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Kevin Urbanczyk, Sul Ross State University, Alpine, TX, USA
Silverio Avila-Sanchez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

Abstract: Soil erosion is a widespread problem that leads to habitat degradation and topsoil loss. Understanding this process is essential for restoring rangeland communities and targeting efficient management strategies. With recent advancements in remote sensing technology, UAVs (Unmanned Aerial Vehicles) are capable of efficiently collecting large amounts of data while minimizing input and observation costs that help monitor landscape changes over time.

This project aims to monitor the effectiveness of trincheras (i.e., rock filter dams) at retaining topsoil. We will do this by constructing 3D models of drainage channels using UAV acquired imagery. We will capture oblique angle images taken from multiple perspectives of the channel and then use them to construct a 3D model using the SFM (Structure from Motion) technique. Image sensor, flight altitude, and image overlap can contribute to variability in resolution of the 3D models. We will assess different combinations of flight altitude, image overlap, and camera sensors to maximize the resolution and assess geomorphic changes over time. After a desired framework process is developed, we will use the heights from the 3D models to monitor sediment accumulation from the trincheras. This process can give us a volume of soil accumulated at trinchera locations and guide management on where to place erosion control structures to maximize efficiency of topsoil retention.

83. Wattles for Water: Comparing Five Restoration Treatments for a Severely Degraded Rangeland in the Northern Chihuahuan Desert

Jason Crosby, Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Sul Ross State University, Alpine, TX, USA

Abstract: Semiarid ecosystems make up over one-third of the earth's land surface. These landscapes provide habitat for various flora and fauna and provide important ecosystem services. However, decades of excessive livestock grazing and extended periods of drought have transformed many of these systems into brush-dominated landscapes incapable of performing their historic functions. Such concern drives recovery efforts in the northern Chihuahuan Desert, where water is the key limiting factor for restoration. Most of the region's precipitation (>70%) is returned to the atmosphere through transpiration or evaporation. The remainder leaves the origin site through runoff and overland flow or remains in place through soil infiltration. Increasing infiltration rates and volume can help increase vegetation germination in these hot desert shrubland systems. This project aimed to compare five hydrology improvement treatments placed on a three-hectare test site within a 60-hectare area grubbed for woody brush in south Brewster County, Texas. All five treatments are based on the emplacement of biodegradable wattles perpendicular to the land's slope. After one year of precipitation, results indicate that wattle placement in areas of increased water potential produced a 35% or greater increase in plant ground cover. Furthermore, decreased soil temperature along wattles with shade cover produced 25% or more plant production than similar wattle treatments without shade. This suggests that strategic placement of wattles in areas of greater water concentration, especially when combined with loose grubbed brush cover shading, can produce plant ground cover percentages that provide a foundation for restoration on degraded hot desert sites.

84. Prevalence and Behavioral Impacts of Toxoplasmosis in Southern Texas White-tailed Deer (Odocoileus virginianus)

Kendall Bancroft, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, SPOKANE, WA, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Randy DeYoung, Texas A&M-Kingsville CKWRI, Kingsville, TX
Aaron Foley, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Hewitt, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Miranda Hopper, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Kevin Lovasik, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Poncho Ortega, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Jason Sawyer, East Foundation, San Antonio, TX, USA
Landon Schofield, East Foundation, Kingsville, TX, USA
Bryan Spencer, Department of Fish and Wildlife Sciences, University of Idaho, Moscow, ID, USA
Ashley Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Toxoplasmosis (causative agent Toxoplasma gondii) is a zoonotic disease that causes significant morbidity in wildlife, domestic animals, and humans. Felids are definitive hosts for T. gondii but most warm-blooded species are susceptible and infection is chronic. The Centers for Disease Control and Prevention has recognized T. gondii as a leading cause of death due to foodborne illness in the United States, and classifies toxoplasmosis as a neglected parasitic infection. Infection has been documented to change host behavior, including loss of fear, increased aggression, and risk-taking. Human disease has been linked to consumption of infected wildlife products (e.g., venison), however prevalence data are sparse for free-ranging game species. White-tailed deer (Odocoileus virginianus) are an ecologically and economically important species and have been identified as an intermediate host for T. gondii. Therefore, understanding the prevalence of toxoplasmosis in deer populations has implications for human health. The objectives of this project are to: 1) assess the prevalence of toxoplasmosis in four distinct white-tailed deer populations in southern Texas, and 2) investigate the effects of infection on the behavior of white-tailed deer. This study will leverage ten years of biological samples and four years of movement data to address stated objectives. Banked serum will be screened for antibodies using a modified agglutination test and movement data will be used to identify behavioral discrepancies between infection statuses. Understanding the prevalence of T. gondii in game species is important for assessing human risk, particularly in southern Texas where many rural communities reside at the wildland-urban interface.

85. Examining Population Dynamics and Spatial Ecology of a Declining Population of Pronghorn in the Southern Great Plains

Marlin Dart, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Evan Tanner, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Matthew Turnley, Oklahoma State University, Stillwater, OK, USA
Derek Hahn, Oklahoma State University, Stillwater, OK, USA
W. Sue Fairbanks, Oklahoma State University, Stillwater, OK, USA
Colter Chitwood, Oklahoma State University, Stillwater, OK, USA
Robert Lonsinger, Oklahoma State University, Stillwater, OK, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Randy DeYoung, Texas A&M-Kingsville CKWRI, Kingsville, TX
George Wang, East Central University, Ada, OK, USA
Michael Cherry, CKWRI, Kingsville, TX, USA

Abstract: Pronghorn (Antilocapra americana) are an ecologically, culturally, and economically important big game species that historically maintained huntable population levels in Oklahoma. Recent surveys, however, indicate the population has been declining for more than a decade. Pronghorn in Oklahoma are limited to the Panhandle region, an area characterized by variable weather and resource availability, increasing anthropogenic development, and changing agricultural practices. We developed a comprehensive 5-year research project beginning in 2022, which aims to assess factors influencing population dynamics and to provide management recommendations to reverse declines. We have captured and GPS collared 147 adult pronghorn, with additional plans to deploy >100 collars over the next two years. We monitored adult females using movement clustering algorithms and visual observations to detect parturition events and collared 70 neonates. We monitored collars to assess vital rates and cause-specific mortality. We collected pronghorn fecal samples to assess the role of diet quality and parasite loads. We also conducted predator scat surveys to evaluate the relative occurrence of pronghorn in predator diets and to generate indices of predator abundance. We will examine the spatial ecology of pronghorn, specifically evaluating resource selection and interstate movement. This research will be used to develop an integrated population model to estimate population growth rates and will inform for population monitoring, habitat management, and harvest strategies for pronghorn in the southern Great Plains.

86. A Comparison of Survey Methods for the Calculation of the Bird Friendliness Index

James Shugart, University of North Texas, Denton, TX, USA
Andrew Gregory, University of North Texas, DENTON, TX, USA

Abstract: To address the decline of grassland birds in the Great Plains region of the United States, the Audubon Society has established the Conservation Ranching Incentive (CRI) for landowners to promote land management practices that benefit native grassland communities. One tool to assess the efficacy of this program is the Bird Friendliness Index (BFI), which considers bird densities, conservation status, and ecosystem function to provide a numerical score to determine a property's capacity to sustain diverse and resilient grassland bird populations. This research aims to compare BFI scores between CRI enrolled and non-enrolled properties, to compare methods of collecting bird count data for BFI calculation, and to determine whether amendments are needed in BFI methodology to better suit the Arid Southwest region. During the spring of 2023, six properties with varying grazing practices, land use, and CRI membership status were surveyed. A total of 228 individual point counts in 9 16-point plots yielded 3,348 total observations of 57 species. Although not a complete reflection of grassland health and function, initial analyses of α biodiversity metrics suggest that CRI enrollment status was not a predictor of richness or Shannon's diversity within these sites, with an intensely grazed, non-enrolled site possessing higher values (S = 32, H = 2.9) than all but one CRI enrolled site. While statistical significance cannot yet be determined due to small sample size and high inter-site variability, future monitoring and analysis will allow for a thorough comparison of BFI scores between sites and efficiency of different count methodologies.

87. Guiding Wildlife: Evaluating Wildlife Exit Designs and Sensor Lights for Safer Highways in South Texas

Rupesh Maharjan, University of Texas Rio Grande Valley, Brownsville, TX, USA
Kevin Ryer, University of Texas Rio Grande Valley, Brownsville, TX, USA
John Young, Texas Department of Transportation, Austin, TX, USA
Richard Kline, UTRGV, Brownsville, TX, USA

Abstract: Globally, road networks have been expanding rapidly and are expected to increase further in the coming years. Roads benefit humans when moving to and from distant places, saving time and money. However, the same linear infrastructure can act as a physical barrier to wildlife movement and result in habitat fragmentation. To alleviate the effects of roads on wildlife in south Texas, wildlife underpasses, wildlife guards (WG), and exclusionary fencing were deployed by TxDOT to prevent wildlife road mortalities. However, fences can sometimes act as a barrier for wildlife stranded within the Right-of-Way (ROW). To address this, TxDOT installed ten wildlife exits (WEs), to allow wildlife to escape the ROW, and sensor triggered lights (STLs) on 13 WGs, to prevent animals from crossing the WG at night. The objectives of this research were to compare the wildlife use of a modified WE design with previous designs and to assess the effectiveness of STLs in deterring wildlife from using WGs. Reconyx trail cameras were used to monitor each WE and WG for a year. Images were downloaded every two weeks, then sorted by species and interaction. A comparison of successful wildlife use of WE between the designs will be made using ANOVA. The number of refusals by wildlife to enter the road at WG before and after installing the STLs at WGs will also be analyzed with ANOVA. If successful,

these novel and cost-effective designs can be replicated on highways with fences worldwide, reducing the rate of wildlife-vehicle collisions.

88. Avian Community Response to Removal of Encroaching Woody Vegetation in Trans-Pecos Grasslands

Audrey Taulli, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Maureen Frank, Sul Ross State University, Alpine, TX, USA

Abstract: The grasslands of North America are one of the fastest declining habitat types on the continent. This is due to a variety of reasons, including energy conversion, livestock grazing, and woody plant encroachment. As a result of this habitat loss, grassland-obligate bird species are in steep decline across the continent. An estimated 88% of migratory grassland birds overwinter in the Chihuahuan Desert. Woody plant encroachment within the Chihuahuan Desert has decreased available grasses, leading to a reduction in winter food availability and nocturnal thermal cover. Encroached woody vegetation also provides more habitat and perching opportunities for avian predator species, such as loggerhead shrikes (Lanius ludovicianus) and American kestrels (Falco sparverius). Grassland restoration efforts typically involve brush removal using herbicide, mechanical removal, and fire. In the Trans-Pecos, we will study sites within the Marathon and Marfa grasslands where herbicide and mechanical removal have been used on mesquite varieties (Prosopis glandulosa Torr. var. glandulosa and Prosopis glandulosa Torr. var. torreyana), creosote bush (Larrea tridentata), and tarbush (Flourensia venus). We will be conducting non-breeding bird surveys and vegetation surveys across a control site, a site 4 years post herbicide treatment, and a site that used mechanical removal 4 years after having been treated with herbicide. Our results will help inform broad-scale restoration that will hopefully result in increases for species currently listed as Species of Greatest Conservation Need.

89. Restoration of Native Vegetation in Areas Invaded by Lehmann´s Love Grass

Andres Solorio, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Louis Harveson, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Silverio Avila-Sanchez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

Abstract: Native and non-native grassland species interact and compete for space and resources. Sometimes, those negative interactions can affect native species by leading them to eradication and converting a rangeland into monocultures. This is due to non-native species having aggressive behavior and better response than natives towards drought and wildfires. Also, some non-native plant species are not preferred by wildlife. For example, scaled quail

(Callipepla squamata) habitat is indirectly affected by negative interactions with invasive species such as Lehmann Lovegrass (Eragrostis lehmanniana). Therefore, we initiated a restoration project to mitigate Lehmann Lovegrass monocultures and increase native plants for scaled quail. This project was located in Southern Brewster County and is part of the Chihuahua Desert. Our goal is to evaluate ways to decrease and control Lehmann Lovegrass. Therefore, we established 200 plots, 16 m2 each, with 4 treatments. Treatments are soil disturbance, native plant seeding, soil disturbance and seeding, and a Control. We used 3 line intersections in each plot. We implemented treatments during the summer of 2022, Data was taken in the post-rainy season in October 2022, the winter season in February 2023, and is going to be measured by two years. Data already collected was treated with a RDA to find relationships between treatments and species, preliminary results indicate that in bouth seasons, LLG is still present, but seeding, and soil disturbance and seeding treatments have more relation with natives plant species and LLG is more related with controls. While soil disturbance treatment have a negative relation with LLG.

90. Livestock Tanks for Migratory and Wintering Grassland Birds in the Trans-Pecos

Emily Blumentritt, Borderlands Research Institute - Sul Ross State University, Austin, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Daniel Collins, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Maureen Frank, Sul Ross State University, Alpine, TX, USA

Abstract: Many grassland bird species are undergoing steep population declines, including many birds that winter in the Chihuahuan Desert grasslands. Overwintering birds in this region have declined by 70%. However, there is little data on habitat preferences and resource utilization for many grassland bird species during migration and winter. In the arid landscape of the Chihuahuan Desert, livestock tanks may be an important water source for birds, and potentially an important food source as well for birds that feed on invertebrates in moist soils. Our study will document which migrating and wintering birds utilize livestock tanks, and what characteristics of livestock tanks relate to bird diversity and abundance. We are using automated recording units (ARUs) and point-count surveys at dirt livestock tanks to determine bird species presence, abundance, and behavior. Characteristics sampled at each tank include soil invertebrates and environmental characteristics such as shrub density and soil moisture. Early surveys have documented 35 species of birds actively using the tanks and engaging in a variety of behaviors. The variety of birds utilizing the tanks has included raptors, shorebirds, warblers, sparrows, flycatchers, and ducks. Tanks with and without water can both provide appealing habitat to birds, as moist soils within dry tanks lead to plant growth that differs from the surrounding grassland and to soil invertebrate foraging opportunities. Knowing more about how birds use livestock tanks as a resource can help inform management decisions to conserve imperiled bird populations, especially on private rangelands.

91. Movement Ecology, Dispersal, and Genetic Relatedness of Mountain Lions (Puma concolor), in South Texas and Mexico

Katherine McDaniel, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Michael Cherry, CKWRI, Kingsville, TX, USA
Randy DeYoung, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Jonah Evans, Texas Parks & Wildlife Department, Boerne, TX, USA
Grant Harris, U.S. Fish and Wildlife Service, Albuquerque, NM, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Clay Hilton, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Dana Karelus, Texas Parks & Wildlife Department, Austin, TX, USA
Chloe Nouzille, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Lisanne Petracca, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, USA

Abstract: Barriers to movement have complex and widespread influences on population dynamics. Anthropogenic barriers like fencing can impede wildlife movements and fragment populations, thereby, eroding genetic diversity, lowering species fitness measures, and increasing a population's extirpation risk. To date, there has been little empirical research to examine if and how the border barrier system separating the United States and Mexico affects the movement ecology, genetic connectivity, and population viability of large mammals. Our project helps fill this research gap by using movement ecology and population genetics to elucidate barrier-induced ecological and demographic consequences on mountain lions (Puma concolor), an apex carnivore able to disperse long distances, and generally requiring large, unfragmented areas of habitat. Our research will investigate mountain lion space use at fine and broad scales, determining the relative importance of maintaining robust Mexican mountain lion populations and transboundary movements of Mexican mountain lions into Texas, for genetic exchange and persistence of viable mountain lion populations in south Texas. Specifically, we will (1) use movement data from GPS collars to evaluate landscape permeability for mountain lions, and (2) use DNA samples from captured mountain lions and historical samples from individuals in Texas and Mexico to describe the genetic relatedness and structure of mountain lions in the borderland region through time. Evaluation of dispersal corridors and genetic structure in the context of the border barrier system will assess the sustainability of mountain lion populations in south Texas, while informing possible statewide and bi-national management and mitigation needs of this transboundary carnivore.

92. Concrete Jungles and Carnivorous Residents: A Multifaceted Exploration of Mesocarnivore Dynamics in Urban Greenspaces

Issabella Serrani Gallego, University of North Texas, Krum, TX, USA
Andrew Gregory, University of North Texas, DENTON, TX, USA

Abstract: Habitat fragmentation is a challenge for most wildlife, but specifically for medium to large mammals as they are more vulnerable to alterations in physical and biological traits as a result of habitat loss and isolation. As landscape connectivity is essential for urban carnivores for movement and dispersal behavior, it is expected that with decreasing connectivity, less functional linkages and higher human presence, carnivores' persistence and survivability will waver within urban matrices. Denton, TX is a model study site for landscape composition as it has both isolated and natural habitat patches with diverse urban wildlife. The goal of my study is to assess the role of landscape connectivity to maintain a functional metapopulation dynamic of mammal diversity in urban greenspaces. This study used primarily camera-trapping using SECR analysis for bobcat (Lynx rufus) and coyote (Canis latrans)density with covariate data of small-mammal trapping for abundance, camera-traps for mesocarnivore occupancy, and vegetation indices for tree diversity and habitat naturalness. Preliminary results demonstrate high density of bobcats within isolated patches while coyotes' density is higher in greenspace corridors. Additionally, small-mammal trapping may suggest low prey density of white-footed mice (Peromyscus leucopus) and deer mice (Peromyscus maniculatus) within natural patches. Over the next year, remaining field data will be analyzed for least cost paths, potential corridors, and habitat patch comparison to aid in urban wildlife ecology and conservation for the City of Denton.

93. Demographic Analyses Suggests Lewisville Population of Painted Buntings is a Demographic Sink

Alejandra Gage, University of North Texas, Denton, TX, USA
Andrew Gregory, University of North Texas, Denton, TX, USA
James Bednarz, University of North Texas, Denton, TX, USA

Abstract: The Painted Bunting (Passerina ciris) is considered a "species of conservation concern" by the US Fish and Wildlife Service due to persistent population declines, and the Breeding Bird Survey notes that the species has declined 56% in Texas from 1966-2022. We collected demographic data from a seven year mark-recapture study on painted buntings in Lewisville, TX (2017-2023). We used a Matrix Projection Model to model population dynamics and then conducted retrospective and prospective analysis on the demographic data to determine the influence of the different vital rates on the finite rate of population change. Juvenile survival (SJA=0.09), adult survival (SA=0.41), and fecundity (FA=0.51) were low. The population was projected to decline (λ=0.502), however, count data over the seven year period has shown the population steadily increasing, which suggests that the painted bunting population in Lewisville may be an ecological sink supported primarily by immigration. The results of the retrospective analysis indicated that the finite rate of population change was most sensitive to adult and juvenile survivorship, while the results of the prospective analysis indicated that management focused on adult survival would have the greatest benefits on mitigating population declines.

94. Evaluating Wildlife Diversity Responses to Pine Plantation Age Structure Using a Multi-taxa Survey

Ethan Menzel, Stephen F. Austin State University Student Chapter of The Wildlife Society, Groesbeck, TX, USA
Cord Eversole, Stephen F. Austin State University, Nacogdoches, TX, USA
Kathryn R. Kidd, Stephen F. Austin State University, Nacogdoches, TX, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA
Reuber Antoniazzi, Stephen F. Austin State University, Nacogdoches, TX, USA

Abstract: The Southern U.S. accounts for over half of the timber production in the country, generating over 54 billion dollars of income annually. Forest plantations in the Southeastern U.S. are predominantly composed of loblolly pine (Pinus taeda). As pine trees are continually being planted and harvested, this cycle creates a mosaic of stands made up of different cohorts. This mosaic provides a diversity of habitats and therefore contributes to a dynamic recolonization of wildlife species. Our research will use a multi-taxa approach to sample insect floral visitors, herpetofauna, avifauna, and mammalian fauna within loblolly pine plantations to determine differences in wildlife assemblages among stand ages (cohorts). We will utilize the following equipment for our sampling techniques: blue vane traps, coverboards, automated recording units (ARUs), and camera traps. These items will be used across 12 sites containing young (2-6 years old) and mature (18-22 years old) pine stands, i.e., a paired-plot sampling design. We expect young pine stands to have greater species richness levels for insect floral visitors and reptiles, while mature pine stands will have greater species richness levels for birds, mammals, and amphibians. Results from our study will improve our understanding of the influence and dynamics of pine forest age structure on wildlife species in Texas.

95. Space Use of Sympatric Aoudad and Mule Deer in the Trans-Pecos

Andrew Dotray, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Lalo Gonzalez, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA
Levi Heffelfinger, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Ransom Canyon, TX, USA
Froylan Hernandez, Texas Parks & Wildlife Department, Alpine, TX, USA
Shawn Gray, Texas Parks & Wildlife Department, Alpine, TX, USA
Justin French, Borderlands Research Institute - Sul Ross State University, Alpine, TX, USA

Abstract: The ecology of Aoudad (Ammotragus lervia) in Texas is poorly understood, where the introduced African species coexist and potentially interact with the native mule deer (Odocoileus hemionus). Aoudad space-use, daily activity cycles, and social dynamics are largely unknown in the Trans-Pecos region of Texas. However, they are important relative to their potential impact on mule deer and desert bighorn sheep (Ovis canadensis) recovery in the region. With improved quantitative techniques in movement ecology, aoudad space-use can be readily assessed using the Brownian bridges movement model, calculated using collar data. No literature has quantified aoudad utilization distributions using the BBMM or examined the influence of aerial gunning relative to changes in movement behavior. In April 2023, 40 aoudad and 40 mule deer were captured and collared in the Chinati and Quitman Mountain ranges.

Collars record the animal's location via satellite at 2-hour fixes. To date, utilization distributions for both aoudad and mule deer have been calculated for each collared individual. Results demonstrate aoudad on average range over wider areas (58.04 km2 in the Quitmans and 23.99 km2 in the Chinatis) compared to mule deer average space-use (3.30 km2 in the Quitmans and 3.87 km2 in the Chinatis). Utilization distribution overlap between species was calculated using the Bhattacharyya's Affinity (BA) niche overlap metric, resulting in a 58.5% overlap in the Quitmans and 40.6% in the Chinatis. Comparing pre- and post-aerial gunning movement behavior will prove valuable in understanding aoudad movement spatially and temporally, for future development in native big game recovery.

96. Species-Specific Patterns of Consumption of Oral Rabies Vaccine Baits in the South Texas Plains

Haley Sloan, Texas A&M University - College Station, Wimberley, TX, USA
John Tomeček, Texas A&M University - College Station, Austin, TX, USA
Tyler Campbell, East Foundation, San Antonio, TX, USA

Abstract: Oral Rabies Vaccine (ORV) baits have been aerially dropped along the US-Mexico border since 1995 for canine rabies. However, there is little information on the fate of baits once they are deployed across the landscape. Our goal is to determine which species are consuming the ORV baits in the South Texas Plains. We used ArcGIS to generate eight 1 km2 grids with 18 camera trap sites in each grid. We hand applied one ORV bait per camera trap at two grids during each application trip. We collected camera data from 144 different sites for four consecutive weeks during each of the four calendar seasons on the East Foundation's San Antonio Viejo Ranch. We will determine species-specific consumption of ORV baits, and how other factors, such as season may affect consumption patterns. We will generate competing a set of competing models and use Akaike's Information Criterion (AIC) to determine which model best explains specific-specific patterns of bait use among those considered. We will evaluate how temperature, season, and species impacts ORV bait consumption. We will then check the likelihood of our top models. We predict that species and season will affect ORV bait consumption. The results from this study will help better inform ORV management practices for future ORV aerial drops.

Professional Poster Session

1. Movement Patterns, Home Range, and Microhabitat Use of Alligator Snapping Turtles in a Small East Texas Stream

Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Connor Adams, Stephen F. Austin State University, Nacogdoches, TX, USA
Sophia Gartenstein, Stephen F. Austin State University, Nacogdoches, TX, USA
Josh Pierce, USDA Forest Service, Nacogdoches, TX, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA

Abstract: The alligator snapping turtle (Macrochelys temminckii), the largest freshwater turtle in North America, faces numerous threats, with population declines and range contractions suspected to have occurred across the historic range of the species. Most studies on movement patterns and microhabitat use of M. temminckii have been conducted in large, open, lentic environments and few studies have been conducted in small, lotic habitats. We investigated the movement and microhabitat use of adult female and juvenile M. temminckii within Bonaldo Creek, a small tributary of the Angelina River in eastern Texas. Six M. temminckii were monitored (2-3 relocations per week) via radiotelemetry from July 2008 to September 2009. We found that the linear home range for adult females (1395.5 – 405.1 m) was higher than that of the unsexed juveniles (996.9 – 439.7 m), although movement frequency was similar between groups. Juveniles utilized a smaller subset of microhabitats compared to adult females. Adult females utilized microhabitats with abundant submerged structure, while overhanging vegetation was an important microhabitat feature for juveniles. The broader microhabitat use we observed in adult females may have been influenced by seasonal factors, highlighting the need for more long-term, seasonal assessments of M. temminckii movement and microhabitat. Such investigations will bolster our understanding of the spatial and temporal factors that influence M. temminckii populations in different systems.

2. Activity patterns of a reintroduced population of Louisiana Pinesnakes across multiple temporal scales

Josh Pierce, USDA Forest Service, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA
Emlyn Smith, USDA Forest Service, Bentley, LA, USA

Abstract: Knowledge of an organism's phenology can inform monitoring efforts by maximizing detections during surveys, especially when time and effort is limited. Conservation efforts for the Louisiana Pinesnake (Pituophis ruthveni), a federally threatened species, include a reintroduction program with the release of captive reared snakes. Since 2010, snakes (N = 408) have been released annually on the Catahoula Ranger District of the Kisatchie National Forest of Louisiana. Individuals were marked with a PIT (Passive Integrated Transponder) tag prior to their release on the reintroduction site where they were monitored with automated PIT tag readers (APTRs) and box traps. Through this large scale and intensive monitoring effort, we sought to quantify the daily and monthly activity patterns of Louisiana pinesnakes. Snake activity was highest in May, and decreased, but remained consistent, during the summer months (June – September). APTRs revealed the daily activity patterns of snakes with the greatest activity occurring between from 1100 – 1800 h with a peak of activity between 1200 – 1300 h. These data will assist decision makers in determining when to monitor for these snakes if/when resources are limited. These results can also be used to help guide a standardized monitoring effort across multiple sites or populations.

3. King Ranch Bluestem Expansion on Small Prairies in Southeastern Texas from 2012 to 2023

Richard Schaefer, USDA Forest Service, Nacogdoches, TX, USA
Josh Pierce, USDA Forest Service, Nacogdoches, TX, USA

Abstract: Many small and isolated prairies occur on the Sam Houston National Forest (SHNF) in southeastern Texas as disjunct extensions of the southern portion of the larger blackland prairie ecoregion to the west. King Ranch (KR) bluestem (Bothriochloa ischaemum), an invasive grass native to Eurasia and North Africa, has been planted in Texas by ranchers as forage and by the highway department along roadsides. From there it has been unintentionally spread to other areas. KR bluestem is now well established on many SHNF prairies where it aggressively competes for space with native prairie vegetation, drastically altering the plant composition at some sites by creating dense, homogeneous stands over time. In 2012, we measured the total area of six prairies (mean = 2.1 ha) and the total area within each prairie dominated (≥50%) by KR bluestem. In 2023, we again measured the area dominated by KR bluestem within the same prairies. We compared 2012 and 2023 measurements to determine the extent of KR bluestem expansion during the eleven-year interim. The mean percent area dominated by KR bluestem in 2012 and 2023 was 7.8% and 19.7%, respectively. This translates to a 150% increase in area dominated by KR bluestem from 2012 to 2023 on the six prairies. The transition from a native prairie plant assemblage to dense expanses of KR bluestem may negatively affect certain vertebrate communities. There is evidence suggesting that rodents and some species of overwintering sparrows in these prairies tend to avoid larger areas of dense KR bluestem.

4. Piping Plover Winter Site Fidelity Along the Upper Texas Coast

Taylor Bennett, Gulf Coast Bird Observatory, Lake Jackson, TX, USA
Rebecca Bracken, Gulf Coast Bird Observatory, Lake Jackson, TX, USA

Abstract: The Piping Plover (Charadrius melodus) is federally listed as threatened in the United States, and is considered endangered within the Great Lakes region and Canada due to habitat loss, human disturbance, and climate change. While breeding status is well known, the wintering populations of this species are not well understood. As a direct result of banding efforts of United States Geological Survey, Virginia Tech, Nebraska Game and Fish Commission, and other organizations, we were able to determine origin and age of the banded individuals we observed during long-term winter surveys. To evaluate site fidelity, we chose four flagged Piping Plover at random from all flagged plovers (N = 63) seen at least once at Matagorda Peninsula along the Upper Texas Coast from fall 2018 through spring 2023. We determined distance between known breeding (capture) location and first observed winter detection at the site. After initial observation, each flagged plover was observed multiple times throughout the non-breeding season along the peninsula. We determined the ages of the observed Piping Plover ranged from 5 to 12 years and average distance traveled during annual migration was 3,167 kilometers. By looking at the origin of each Piping Plover, we noted that all four individuals originated from the Great Plains Region (North Dakota, South Dakota, Colorado, and Nebraska) and are from threatened populations. With each individual seen yearly for four consecutive seasons within the same location, continued monitoring and conservation efforts are necessary to maintain this important wintering habitat for this, and other, imperiled species.

5. Effects of Range Management on the Plateau Spot-tailed Earless Lizard, Year 2 Results

Kathryn Steffen, Texas A&M University Natural Resources Institute, College Station, TX, USA
Danielle Walkup, Texas A&M University - College Station, Bryan, TX, USA
Mycha Van Allen, Texas A&M University - College Station, Bryan, TX, USA
Eden Fielder, Texas A&M University Natural Resources Institute, College Station, TX, USA
Corey Fielder, Texas A&M University Natural Resources Institute, College Station, TX, USA
Teresa Kenny, Texas A&M University - College Station, Bryan, TX, USA
Toby Hibbitts, College Station, TX, USA
Doug Tolleson, Department of Rangeland, Wildlife and Fisheries Management, Texas A&M AgriLife Research, Sonora Research Station, Sonora, TX, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Paul Crump, Texas Parks & Wildlife Department, Austin, TX, USA
Wade Ryberg, Texas A&M University - College Station, College Station, TX, USA

Abstract: The plateau spot-tailed earless lizard (Holbrookia lacerata) is currently under review for federal listing. Its range includes the semi-desert grasslands of the Edwards Plateau in Central Texas, across which apparent population declines have been observed. On a microhabitat scale, previous research has shown that H. lacerata is most often encountered on bare ground and less frequently in dense or brushy vegetation. Our research objective is to better understand which rangeland management practices cultivate microhabitat landscapes preferred by H. lacerata. Our second year of surveys have concluded at the Texas A&M AgriLife Research Station at Sonora in Edwards County. The Sonora Station has researched long-term control, grazing, and fire management treatments for decades, providing a well-documented landscape that focuses on rangeland practices already implemented in this region. A diverse habitat mosaic may be preferable to our target species and rangeland practices such these are regularly used to control patches of woody vegetation and encourage such landscapes. For H. lacerata detection surveys we use a stratified random sampling design with forty 0.8-ha circular survey plots across four treatments: control, graze, burn, and burn and graze. In year two we also began vegetation surveys with a sampling design derived from the point-centered quarter method, as well as H. lacerata tracking. Preliminary results show that individuals were found primarily in grazed (n=10), burned (n=7), or burned and grazed plots (n=5), with only one individual caught in the control plots. We will continue to survey H. lacerata and collect habitat data in 2024.

6. Camera-Trap Basking Arrays Detect Western Chicken Turtles in Dynamic Ephemeral Wetland Mosaics

Wade Ryberg, Texas A&M University - College Station, College Station, TX, USA
Brandon Bowers, Texas A&M University Natural Resources Institute, College Station, TX, USA
Corey Fielder, Texas A&M University Natural Resources Institute, College Station, TX, USA
Danielle Walkup, Texas A&M University - College Station, Bryan, TX, USA
Mickey Parker, Texas A&M University Natural Resources Institute, College Station, TX, USA

Toby Hibbitts, Texas A&M University Natural Resources Institute, College Station, TX, USA
Roel Lopez, Texas A&M University Natural Resources Institute, San Antonio, TX, USA
Paul Crump, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: Temperature and precipitation vary regionally, seasonally, and annually creating different constellations of ephemeral wetlands over time. Species occupying ephemeral wetlands must track these dynamics as the location, size, shape, permanence, density, and spatial configuration of suitable habitat shifts. Such species can be difficult to sample, especially when methods involve intensive trapping. Semiaquatic freshwater turtles, in particular, can be difficult to study with traditional trapping techniques, because individuals track shifting suitable habitat via far-ranging terrestrial movements throughout large, dynamic ephemeral wetland complexes. Here, we develop and assess the efficacy of an inexpensive camera-trap basking array designed to move up and down with the changing water levels of ephemeral wetlands occupied by Western Chicken Turtles, a subspecies under review for listing under the U.S. Endangered Species Act. At a study site in Texas, we deployed one camera-trap basking array at four different wetlands, all known to have chicken turtles present. The camera-trap basking array was effective at detecting Western Chicken Turtles at three of the four wetlands during the study. On-going research is focusing on understanding the causes of this variation in detection across all four wetlands. The simple, durable design and low cost (<$500, US) of this camera-trap basking array provides opportunities to scale up surveys for the species range-wide and to conduct research on its behavior and population dynamics within ephemeral wetland complexes.

7. A Collaborative Approach to Managing and Recovering Wild Houston Toad Populations

Corey Fielder, Texas A&M University Natural Resources Institute, College Station, TX, USA
Toby Hibbitts, Texas A&M University Natural Resources Institute, College Station, TX, USA
Wade Ryberg, Texas A&M University - College Station, College Station, TX, USA
Kathryn Steffen, Texas A&M University Natural Resources Institute, College Station, TX, USA
Danielle Walkup, Texas A&M University - College Station, Bryan, TX, USA
Paul Crump, Texas Parks & Wildlife Department, Austin, TX, USA

Abstract: Houston Toads (Anaxyrus houstonensis) have been federally listed as endangered under the Endangered Species Act since 1970 due to a multitude of factors contributing to the loss and alteration of this species' native habitat. Currently, there is a multipronged collaborative effort involving federal, state, and local agencies working on a Houston Toad management and recovery program. The prongs of this program include protecting and restoring habitat, propagating and supplementing individuals into the wild, establishing a monitoring program, and educating the public through outreach programs. As a part of this recovery program, the Natural Resources Institute has been tasked with monitoring and surveying for wild chorusing Houston Toad populations in Robertson and Leon Counties, TX. To detect chorusing Houston Toads, we established 20 roadside auditory survey points in each county based on historical records and results from habitat models. To supplement the driving surveys, we also deployed 20 automatic

recording devices (ARDs) on private lands throughout these counties. In total, we conducted 33.4 hours of roadside auditory surveys and the ARDs collected approximately 3247.1 hours of recordings between 6 January 2023 and 14 July 2023. The surveys were unsuccessful in detecting wild chorusing Houston Toads, but we did detect the presence of 12 anuran species calling during this survey period. Here, we present our preliminary results and future work towards managing and recovering wild Houston Toad populations in Robertson and Leon Counties, TX.

8. Using Automated Recording Units to Examine the Calling Behavior of the American Woodcock in Eastern Texas

Cory Adams, USDA Forest Service, Nacogdoches, TX, USA
James Childress, Contractor, USDA Forest Service, Nacogdoches, TX, USA
Rusty Plair, New Waverly, TX, USA
Daniel Saenz, USDA Forest Service, Nacogdoches, TX, USA
Clifford Shackelford, Birdscapes Wildlife Consulting, Nacogdoches, TX, USA
Hope Zubek, Texas Parks & Wildlife Department, New Waverly, TX, USA

Abstract: The American woodcock (Scolopax minor) is found in forested habitats across eastern North America, with eastern Texas representing the southwestern most part of their breeding range. The woodcock has a unique breeding display which starts with “peent” calls and continues with a spiraling flight that can extend upwards to 350 feet off the ground. We implemented a sampling protocol to determine if automated recording units (ARUs) were suitable for detecting American woodcock, and if so, examine the calling behavior of the American woodcock in eastern Texas, specifically on the Sam Houston National Forest. We detected American woodcock at 19 of the 20 sites we sampled from 20 January through 5 March 2023. Detections included four sound types: “peent” call, display flight, “cackle” call and fly overs. Peent calls and display flights, which represent breeding behavior, were detected at 16 of 20 sites sampled. Woodcocks called as early as one minute after sunset but, on average, calling began 15 minutes after sunset and these vocalizations continued for an average of 20 minutes per night. Although our ARUs were not deployed in time to determine the date of first calling in 2023, the last vocalization of the season was detected on 5 March 2023. In our study, American woodcock were detected at nearly all our survey sites suggesting that the species was common and widespread across the Sam Houston National Forest in 2023. We conclude that ARUs are very effective at detecting calling and flight displays associated with American woodcock breeding activity.

9. Marine Debris and Public Outreach: a Dashboard is Worth a Thousand Words

Jess Lucas, Black Cat GIS and Biological, Austin, TX, USA
Amanda Hackney, Black Cat GIS and Biological, Pearland, TX, USA

Abstract: Though marine debris is a known danger to coastal ecosystems and wildlife, resolving the litter problem requires changing the attitude of the public and inspiring care for the

environment.SPLASh (Stopping Plastic Pollution Along Shorelines- a litter cleanup group based in the Houston-Galveston region) connects people to wildlife via programming that specifically targets litter in bird habitats. SPLASh runs litter cleanups with the support of volunteers, collecting and documenting litter using a specific methodology (STOP), creating reliable and consistent data. This data is then added to the Texas Litter Database, a statewide repository of publicly available litter data. SPLASh requested an online visual representation of their project progress, using metrics from their litter cleanups. While presenting scientific data in a friendly, engaging manner can be challenging, the use of maps, landmarks and attention-grabbing graphics can help citizens recognize issues impacting their communities. Dashboards can be a major asset to the web presence of an organization, especially if metrics are important for any funding or outreach efforts. To create a solution for SPLASh, we imported cleanup data to design a versatile and flexible solution that combined ArcGIS Storymaps and Dashboards for their project. These dashboards seamlessly import data directly from database downloads allowing the system to be easily used by non-GIS professionals, allowing SPLASh to maintain the system independently with little to no assistance.

10. How Do Ethnicity and Gender Affect Students Choosing Careers in Wildlife?

Scott Henke, Texas A&M University - Kingsville, Kingsville, TX, USA
Sandra Rideout-Hanzak, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
Fidel Hernandez, Texas A&M University - Kingsville, Kingsville, TX, USA
Alynn Martin, Caesar Kleberg Wildlife Research Institute - Texas A&M University - Kingsville, Kingsville, TX, USA
David Wester, Texas A&M University - Kingsville, Kingsville, TX, USA
Shuhua Yu, NA, Laredo, TX, USA

Abstract: Ethnic and gender diversity are commonly sought after by universities and employers alike. While we agree this is a worthy goal, we questioned whether factors outside the control of universities and employing organizations influenced students' selection of careers, which resulted in skewed diversity within the field of wildlife science. We compared ethnic and gender composition of the general population (US, Texas, and southern Texas) from the US Census Bureau to declared majors at a Hispanic-serving institution in southern Texas (Texas A&M University-Kingsville; TAMUK) in 2010, 2015, and 2021. We found that the percent of Hispanics enrolled in a Rangeland and Wildlife Sciences Department (RWSC) was substantially less (51.7%) than the Hispanic population at TAMUK (68.5%), and female Hispanics comprised only 16% (N=26) of RWSC students. Only <1% and 0% of African Americans and Asians, respectively, were enrolled in RWSC at TAMUK. We conducted an informal survey of TAMUK students (N = 146) to better understand what factors influenced their career choice. The majority of Hispanic females (79%; 34 of 43) stated they were taught as children that women became teachers or nurses. Asian students (N = 5) said they received parental influence to enter careers similar to their parents, either in medicine, engineering, or finance. Only Caucasian students (N = 24) believed their career choice was their own to decide. If universities and institutions desire diversity, programs designed to increase diversity in the workforce must start early and include outreach to parents.

11. A GEM in the Rough? The Grasslands Effectiveness Monitoring (GEM) Protocol as An Integrated and Tiered Approach to Grassland Habitat Treatment Assessment

Rebekah Rylander, American Bird Conservancy/Rio Grande Joint Venture, Rockport, TX, USA
Anna Matthews, OPJV/ABC, San Marcos, TX, USA
Daniel Bunting, Science Applications, U.S. Fish and Wildlife Service, Southwest Region, Austin, TX, USA
Michael C. Duniway, Southwest Biological Science Center, U.S. Geological Survey, Moab, UT, USA
James Giocomo, American Bird Conservancy, Durand, IL, USA
Anna Knight, Southwest Biological Science Center, U.S. Geological Survey, Moab, UT, USA
Adriana Leiva, Gulf Restoration Program, U.S. Fish and Wildlife Service, Corpus Christi, TX, USA
Robert Perez, OPJV/ABC, La Vernia, TX, USA
Kourtney Stonehouse, Partners for Fish and Wildlife Program, U.S. Fish and Wildlife Service, Falls Church, VA, USA
Derek Wiley, Texas Parks and Wildlife Department/Oaks and Prairies Joint Venture, Throckmorton, TX, USA
Don Wilhelm, Partners for Fish and Wildlife Program, U.S. Fish and Wildlife Service, Arlington, TX, USA

Abstract: There have been successful voluntary conservation programs, such as the Grassland Restoration Incentive Program (GRIP) and the USFWS Partners, that assist private landowners with restoring critically declining grassland habitat in Texas (98% privately owned). The success of these restoration and conservation programs are insightful and have slowed grassland habitat degradation and loss. However, few monitoring protocols exist that scientifically evaluate the extent to which habitat is successfully restored and if best management practices were used. Therefore, members of the USFWS, USGS, Oaks and Prairies Joint Venture, Texas Parks and Wildlife, and Rio Grande Joint Venture developed the Grassland Effectiveness Monitoring (GEM) protocols which are modified from the Bureau of Land Management Assessment, Inventory, and Monitoring (AIM) strategy, and are compatible with data collected by the Natural Resources Conservation Service National Resource Inventory rangeland on-site survey. Thus, GEM is a statistically robust, user-friendly option to assess the effectiveness of best management practices used in restoring grassland habitat. After two years of pilot field work, GEM is proving to be scientifically sound in its ability to detect changes in vegetation structure post-management. GEM allows users to choose between three different tiered approaches, with each protocol having varying levels of complexity, catering to expertise level, monitoring goals, budget, and project timelines. Therefore, by creating a standardized protocol that can be widely used in grassland restoration across North America, we may be better prepared to understand how management practices are influencing restoration efforts.

12. Movement and Habitat Selection of Repatriated and Wild Alligator Snapping Turtles in Eastern Texas

Connor Adams, Stephen F. Austin State University, Nacogdoches, TX, USA
Jessica Glasscock, Stephen F. Austin State University, Nacogdoches, TX, USA
Christopher Schalk, USDA Forest Service, Nacogdoches, TX, USA

Abstract: The alligator snapping turtle (Macrochelys temminckii) is the largest freshwater turtle in North America. Although M. temminckii occur in a variety of riverine habitats, they possess a life history characterized by high juvenile mortality and longer maturation periods. Therefore, illegal harvest or bycatch may exacerbate local population declines. Knowledge of their spatial ecology in the wild is limited, and few translocation studies are known. Here, we investigated the movement and habitat use (i.e., macro- and microhabitat selection) of repatriated and wild M. temminckii to explore the feasibility of repatriation efforts. Repatriated and wild turtles, fitted with VHF radios, were monitored weekly from September 2022 to September 2023. We calculated home ranges using 95% Auto-correlated Kernel Density Estimates (AKDE), and investigated movement over time with Generalized Additive Models (GAM). Incorporating a hierarchal approach, we quantified macrohabitat availability and collected a suite of microhabitat variables at M. temminckii locations and paired random points. We observed sex-specific differences in home range size in both groups, and found repatriated female home ranges less contiguous compared to wild females. Seasonal movement responses were similar between groups, but repatriated turtle movements were exacerbated compared to wild turtles. We found repatriated turtles utilized more riverine macrohabitat and wild turtles utilized mostly wetlands and oxbows. However, we found no difference in microhabitat selection between groups. Our results suggest key aspects of M. temminckii ecology can be affected when introduced into novel environments, and this may impact the long-term ability to acquire resources over time and survive.