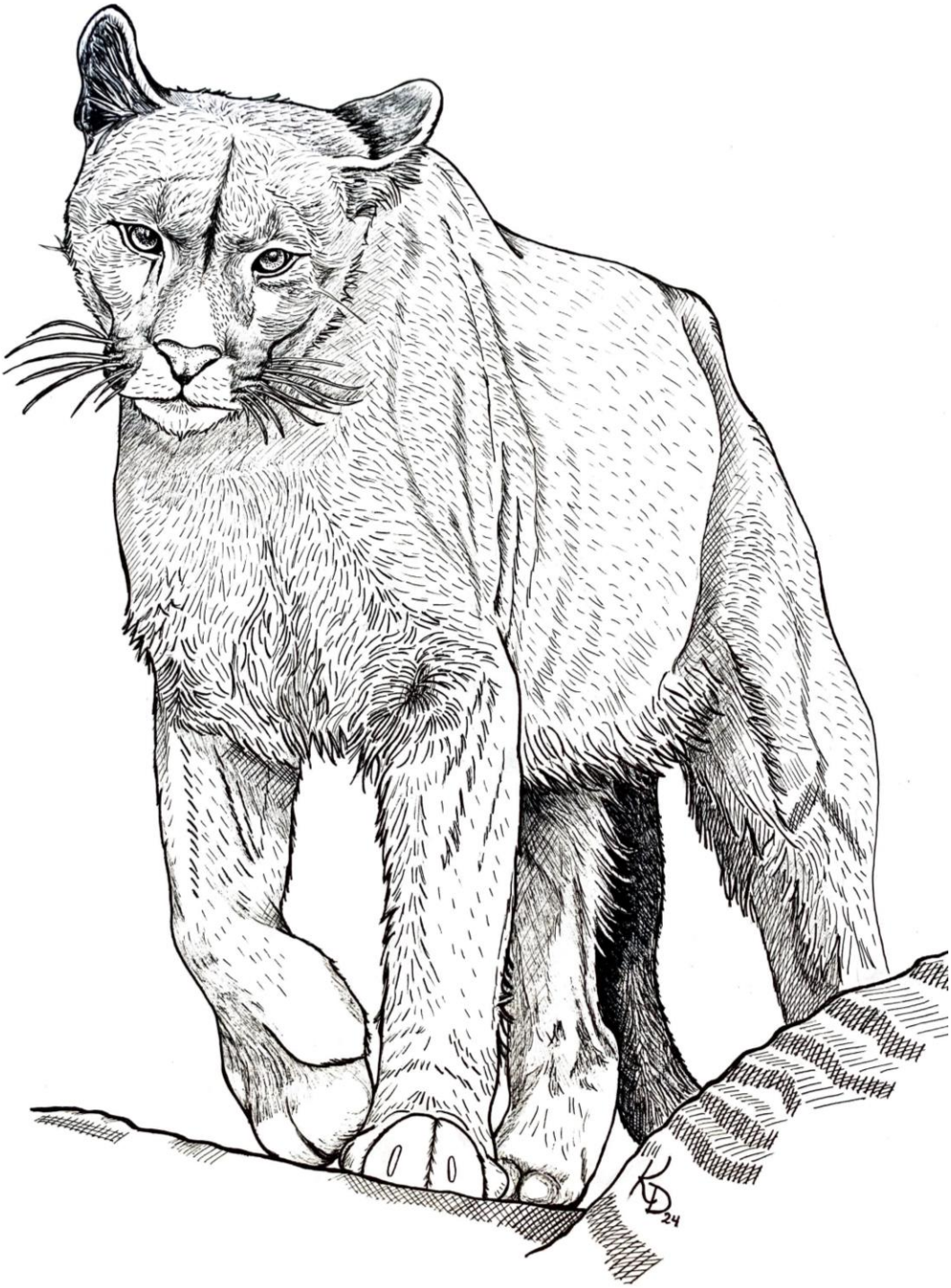
TEXAS SOCIETY OF MAMMALOGISTS



PROGRAM, ABSTRACTS, AND NEWSLETTER

42nd Annual Meeting

16-18 February 2024

#TSM2024

Texas Society of Mammalogists

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Cover illustration: Mountain Lion by Krysta Demere.

Texas Society of Mammalogists
42nd Annual Meeting
16-18 February 2024

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MENU 2024

Friday:
6:00 pm DINNER
Build your own burger, macaroni and cheese, fries, desert, and salad

Saturday:
7:00 am BREAKFAST
Breakfast tacos, hash browns, cinnamon rolls, assorted cereal, and fruit

9:35 am Break
Coffee, tea, water, scones, muffins, granola bars, fruit

Saturday:
12:00 pm LUNCH
Potato bar, corn salad, taco salad, salad bar, broccoli spears, cornbread, brownies, and ice cream

3:15 pm Break (in Packard Building)
Coffee, tea, water, cookies, trail mix, fruit

Saturday:
5:30 pm BANQUET DINNER
Chicken fried steak, mashed potatoes, cream gravy, green beans, salad bar, wheat dinner rolls, chocolate pie

Sunday:
7:30 am BREAKFAST
Pancakes, bacon, hash browns, blueberry muffins, English muffins, assorted cereals, and fruit

RULES FOR USE OF THE TEXAS TECH UNIVERSITY CENTER AT JUNCTION'S LLANO RIVER FIELD STATION

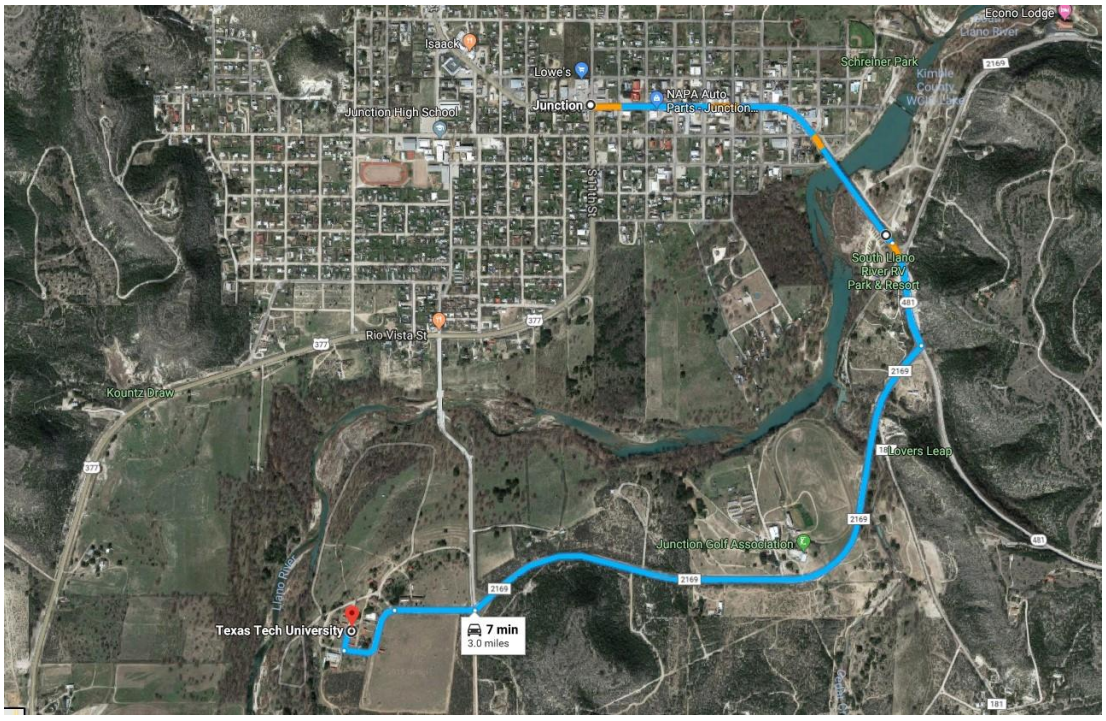
- Drugs and alcohol are strictly prohibited at the center*. Unauthorized use of either will result in immediate eviction with no refund. (*see exception below for TSM social hours)
- Do NOT drive on the grass. Stay on designated roads and out of unauthorized areas.
- Do NOT secure any items to the walls and/or doors without prior approval. This includes the use of tape, nails or screws.
- Do NOT remove or dismantle ANY furniture in the buildings, including beds and mattresses, clocks, other wall hangings or fixtures. DO NOT sit or stand on tables.
- Please remove all your event signs and/or posters before you depart.
- Pets, firearms, and camping are not allowed on campus.
- Fires are allowed ONLY with prior permission and ONLY in designated fire pit areas. The field station adheres to the Kimble County Burn Bans.
- Use of electric skillets, hot plates and other electrical cooking appliances is prohibited in all lodging areas. This also applies to electric heaters.
- Smoking is strictly prohibited inside **any** building.
- All plants and wildlife are protected at the field station and are not to be harvested or removed.
- Use of recreational vehicles is strictly prohibited on center.
- Do not prop open doors in ANY building

Any infractions, disregard, and/or negligent behavior resulting in the damage to the facilities, furniture, or equipment will be assessed a fee of no less than $500.00. This includes outside areas as well as tampering with thermostats in locked boxes. This damage/tampering fee will to be added to the Society's final bill.

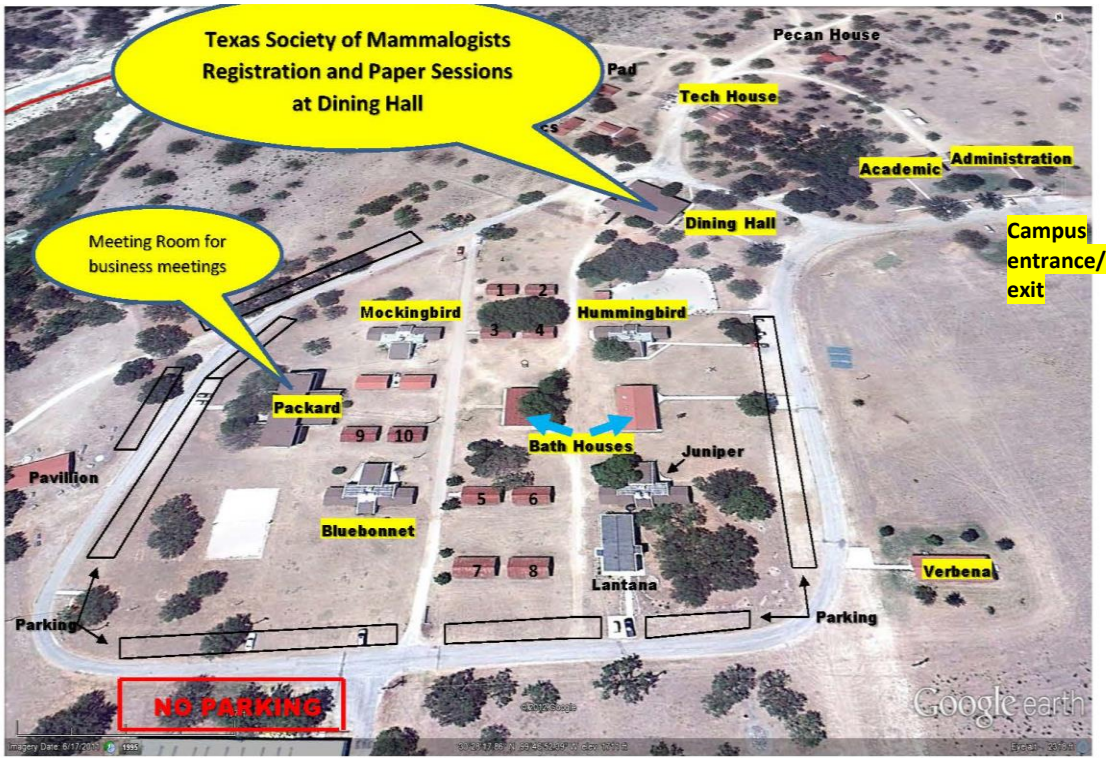
***Alcohol Rules for Texas Society of Mammalogists: Consumption of alcohol by persons over 21 years of age is permitted only in the Dining Hall from 7 pm to 12 midnight Friday and Saturday night. Attendees must show their ID at registration to receive a wrist band that will verify their legal age and two drink tickets. A licensed bartender will be present to distribute up to two alcoholic beverages per attendee wearing a wrist band. A Security Officer will be present on campus to monitor and respond to any illegal activities or safety concerns. Please follow the rules and behave yourselves so TSM can continue to meet at the Junction Center each year! Thank you!**

DIRECTIONS TO TTU LLANO RIVER FIELD STATION FROM JUNCTION

The bridge via the "back way" to campus has not been replaced. Please use the route shown below.



CAMPUS MAP



Note: There are two single-stall restrooms available in the Dining Hall. In the case of long lines, or the restrooms being out of order, the Bath House restrooms are available for use.

Creekside Mosaic

Soctopus Store

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Juliet Whitsett

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Fineasslines

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And Many More*

*Donor list as of 02/04/2024

THANK YOU FOR YOUR DONATION

The 9 student presentation awards offered by Texas Society of Mammalogists are made possible by the generous donations of the society's members and many external businesses to our annual live and silent auctions. The support of our donors ensures that we have the resources to recognize and reward current students and future professionals in the academic, state, and national wildlife fields for excellence in mammalian research.

2024 Program Schedule

Friday, 16 February

3:00–7:30 pm	Registration	Dining Hall
4:30–6:00 pm	Meeting of the Executive Committee	Packard Building
6:00 pm	Dinner (serving line open 6:00–6:30 pm)	Dining Hall
7:00 pm	Announcements/Welcome Address TSM President Jessica Healy-La Price	Dining Hall
7:30–9:30 pm	Poster Presentations	Dining Hall

Saturday, 17 February

7:00 am	Breakfast and Registration (serving line open 7:00–7:30 am)	Dining Hall
8:00 am	Introduction and Announcements TSM President Jessica Healy-La Price	Dining Hall

PAPER SESSION 1

(Presenters' names are underlined)

Moderator: Cody Thompson, University of Michigan

Papers 1–6 are to be considered for the William B. Davis Award.

8:15 Paper 1 – **OCCUPATION, ACTIVITY PATTERNS AND RELATIVE ABUNDANCE OF THE LOWLAND TAPIR (*TAPIRUS TERRESTRIS*) IN ARAUCA, COLOMBIA** Ángela Alviz, Richard D. Stevens, and Jorge Salazar-Bravo

8:30 Paper 2 – **POPULATION STRUCTURE OF THE GIANT OTTER (*PTERONURA BRASILIENSIS*) IN TAURAMENA (CASANARE, COLOMBIA) AND CONSERVATION CHALLENGES.** Isabella Beltrán-Triana, Ángela Alviz, and Karen Pérez-Albarracín

8:45 Paper 3 – **INFLUENCE OF TRAFFIC VOLUME ON THE CARNIVORE COMMUNITY COMPOSITION WITHIN THE ROAD EFFECT ZONE** Thomas J. Yamashita, David B. Wester, Zachary M. Wardle, Daniel G. Scognamillo, Landon R. Schofield, Michael E. Tewes, John H. Young Jr., and Jason V. Lombardi

9:00 Paper 4 – **A TEST OF AUTOMATED TRACKING SOFTWARE (THRUTRACKER) USING 14 YEARS OF CAVE EMERGENCE DATA** Loren K. Ammerman, Ashley Loehn, Flor Calderon, and Michael T. Dixon

9:15 Paper 5 – **DIET OF *MYOTIS CILIOLABRUM* FROM SIX SITES IN THE SOUTHWESTERN UNITED STATES** Ashley E. Loehn, Dale W. Sparks, and Ernest W. Valdez

9:30 **30 Minute Break**

PAPER SESSION 2

Moderator: Caleb Phillips, Texas Tech University

10:00 Paper 6 – **VARIATION IN REPRODUCTIVE TRAITS AMONG WILD RODENTS ALONG AN ELEVATIONAL GRADIENT IN THE BOLIVIAN ANDES** Susana G. Revollo-Cadima, Adriana Rico-Cernohorska, and Jorge Salazar-Bravo

10:15 Paper 7 – **DEVELOPMENT OF MAMMALIAN ARTIFICIAL VAGINA DESIGNS** Jacquline Rich and Dara N. Orbach

Paper 8 is to be considered for the Rollin Baker Award.

10:30 Paper 8 – **HUMAN PHARMACEUTICALS DETECTED IN DOLPHIN BLUBBER** Anya Isabelle Ocampos, Makayla Guinn, Justin Elliott, Christiana Wittmaack, Carrie Sinclair, Hussain Abdulla, and Dara N. Orbach

Paper 9 is to be considered for the Bobby Baker Award.

10:45 Paper 9 – **ADENOVIRUSES FOUND IN BATS IN WEST TEXAS** Jadance L. Black, Matt J. Van Sant, and Dana N. Lee

Paper 10 is to be considered for the TSM Award.

11:00 Paper 10 – **SHOTGUN METAGENOMICS FOR THE ASSESSMENT OF DIET OF AMERICAN BLACK BEARS (*URSUS AMERICANUS*)** Sufia A. Neha, Bonnie McKinney, Robert D. Bradley, Joseph D. Manthey, and Caleb D. Phillips

12:00 **Lunch** (serving line open 12:00–12:30 pm)

1:30 **Group Photo** in front of the Dining Hall – All members, please attend and please be on time! ☺

2:00 pm **Members Business Meeting** Packard Building
All members, including students, please attend!

5:30–9:00 pm		**Annual Banquet and Auction**	Dining Hall
	5:30–6:30	Dinner (serving line open 5:30–6:00pm)	
	5:30	Silent Auction opens for bidding	
	6:30–7:00	Award Presentations	
	7:00–8:00	Guest Speaker Address:	

Keeping the Path of the Puma Connected

Jim Williams
Heart of the Rockies Initiative

	8:00–9:00	Live Auction Silent Auction ends 10 minutes after Live Auction	
9:00–12:00 pm		Socializing and Dancing	Dining Hall

Sunday, 18 February

7:30 am		Breakfast (serving line open 7:30–8:00am)	Dining Hall

Oral Presentation Abstracts

Papers 1–7 are to be considered for the William B. Davis Award.

Paper 1

OCCUPATION, ACTIVITY PATTERNS AND RELATIVE ABUNDANCE OF THE LOWLAND TAPIR (*TAPIRUS TERRESTRIS*) IN ARAUCA, COLOMBIA Ángela Alviz[1], Richard D. Stevens[2], and Jorge Salazar-Bravo[1] - [1]Department of Biological Sciences, Texas Tech University, [2]Department of Natural Resources Management, Texas Tech University (angela.alviz@ttu.edu)

The lowland tapir has the largest geographic range of any existing tapir species. Populations have declined by approximately 33% in the last three generations due to habitat loss, forest fragmentation, and poaching. Studies on tapirs in the Colombian Orinoquia are fragmented. Therefore, the project aimed to estimate the occupation, activity patterns, and relative abundance of the tapir in Arauquita, Puerto Rondón, and Cravo Norte (Arauca). The area with the highest probability of occupation is Puerto Rondón, due to deforestation and the availability of food. This is attributed to the good state of conservation of the forest cover, which results in a higher concentration of individuals. In contrast, the probability of occupation in Cravo Norte is influenced by fires and food availability. In contrast, the results obtained in Arauquita differ significantly, with roads and the presence of water being the main determining factors. This municipality is facing a combination of pressures that threaten the survival of tapirs. Approximately 70% of the forest cover has been lost in the last 30 years. These results provide a comprehensive understanding of the various factors that may be impacting tapirs. This information is crucial for developing conservation strategies in the area.

Paper 2

POPULATION STRUCTURE OF THE GIANT OTTER (*PTERONURA BRASILIENSIS*) IN TAURAMENA (CASANARE, COLOMBIA) AND CONSERVATION CHALLENGES. Isabella Beltrán-Triana[1], Ángela Alviz[1,2], and Karen Pérez-Albarracín[2] - [1]Department of Biological Science, Texas Tech University, [2]Fundación Orinoquia Biodiversa (ibeltran@ttu.edu)

Giant otter is one of the most endangered mammals in the Orinoquia, as its populations suffered a rapid reduction due to habitat loss and poaching pressure during the 1970's. They mainly inhabit large rivers, streams, lagoons, and wetlands, concentrating in specific habitats as a response to resource availability. Knowing the population status of this species is fundamental for the conservation of riparian ecosystems due to its role as a mesopredator. The otter is considered an umbrella and flagship species. Despite this, population trends in the Orinoquia are still unknown, with available fragmented information in Arauca and the Amazon region. The work sought to generate information on the population structure, distribution, and behavior of the species in Tauramena. Periodic monitoring was carried out for one year along the Tua sub-basin where the species was considered extinct. In total, approximately 250 km were covered, and 4 family groups were recorded. Of the total number of otters documented, 19 were identified, of which it is estimated that there may be 7 males and 11 females according to the behavior they exhibited during the sightings. Despite its strong presence in the area, the species is facing anthropogenic pressures related to deforestation, retaliatory hunting, and oil pollution. For effective management and conservation of the species, it is important to work with local communities and generate baseline ecological information.

Paper 3

INFLUENCE OF TRAFFIC VOLUME ON THE CARNIVORE COMMUNITY COMPOSITION WITHIN THE ROAD EFFECT ZONE Thomas J. Yamashita[1], David B. Wester[1], Zachary M. Wardle[1,2], Daniel G. Scognamillo[1], Landon R. Schofield[3], Michael E. Tewes[1], John H. Young Jr.[4], and Jason V. Lombardi[1,5] - [1]Caesar Kleberg Wildlife Research Institute, Texas A&M University – Kingsville, [2]Florida Fish and Wildlife Conservation Commission, [3]East Foundation, [4]Environmental Affairs Division, Texas Department of Transportation, [5]Wildlife Health Laboratory, California Department of Fish and Wildlife (thomas.yamashita@students.tamuk.edu)

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 of working lands around highways and future conservation efforts for mammals living around roads.

Paper 4

A TEST OF AUTOMATED TRACKING SOFTWARE (THRUTRACKER) USING 14 YEARS OF CAVE EMERGENCE DATA Loren K. Ammerman, Ashley Loehn, Flor Calderon, and Michael T. Dixon - Angelo State University (fcalderon3@angelo.edu)

Management and conservation strategies for bat species require accurate knowledge of population size to determine population trends. In the past 20 years, a common method to count cave roosting bats has been the use of minimally-invasive video formats such as thermal, infrared, and standard video to record nightly emergences that can be viewed and analyzed manually to obtain a census estimate. Recent developments in bat tracking software have provided a time-saving alternative to manual counting methods of recorded video. From 2008-2023 we used FLIR thermal infrared cameras to record emerging Mexican long-nosed bats from a single roost. Video recordings varied in length, camera used, and in the density of bats emerging. Each of the full-length videos (n=35) were analyzed manually to obtain a count of emerging bats and estimate colony size. The data from these recordings provided a unique opportunity to test the congruence with population estimates obtained using the bat-tracking program ThruTracker. Overall, accuracy of estimates ranged from 63% to 99%, with an average accuracy of 92%. Factors which may have had an effect on the accuracy of estimates include video contrast, emergence and return rates, and density during emergence. We conclude that ThruTracker can be an effective method for estimating population size and for detecting changes in populations over time but is not accurate enough to serve in place of manual emergence counts for censusing bats.

Paper 5

DIET OF *MYOTIS CILIOLABRUM* FROM SIX SITES IN THE SOUTHWESTERN UNITED STATES Ashley E. Loehn[1], Dale W. Sparks[2], and Ernest W. Valdez[3] - [1]Dept. of Biology, MSC03 2020, University of New Mexico, Albuquerque, NM, 87131, USA, [2]Environmental Solutions and Innovations, Inc. 4525 Este Avenue, Cincinnati, OH, 45232, USA, [3]U.S. Geological Survey Fort Collins Science Center, Dept. of Biology, MSC03 2020, University of New Mexico, Albuquerque, NM, 87131, USA. (aloehn@angelo.edu)

With bat populations declining in many parts of the world, detailed life-history information will be critical for assessing vulnerabilities of bat populations and associated trophic effects. *Myotis ciliolabrum* is a species of insectivorous bat distributed from the Great Plains to the Pacific coast and from British Columbia to Central Mexico. The species is spottily distributed within this wider range but is locally abundant in areas containing appropriate rocky habitat. Despite being relatively common, little information is available about its feeding ecology. Earlier studies have suggested that skull morphology can be used to determine whether insectivorous bats select for soft or hard-bodied prey, but we hypothesized that *M. ciliolabrum* may feed opportunistically on a variety of insect types. To test this hypothesis, we examined the feeding habits of *M. ciliolabrum* captured during 2000 to 2022 at six national parks and one national conservation area across the Southwest. Visual analysis of prey remains in guano revealed that *M. ciliolabrum* within our study area consumed insects belonging to seven orders (Lepidoptera, Coleoptera, Hymenoptera, Hemiptera, Neuroptera, Diptera, and Odonata) and 20 families. Diet varied over time and across geographic space, though we observed a general trend in which the orders Lepidoptera, Coleoptera, and Hymenoptera were consumed at the highest volumes. This varied diet indicates opportunistic feeding, in which *M. ciliolabrum* makes use of locally abundant resources.

Paper 6

VARIATION IN REPRODUCTIVE TRAITS AMONG WILD RODENTS ALONG AN ELEVATIONAL GRADIENT IN THE BOLIVIAN ANDES Susana G. Revollo-Cadima[1], Adriana Rico-Cernohorska[2], and Jorge Salazar-Bravo [1,3] - [1]Department of Biological Sciences, Texas Tech University, [2]Carrera de Biología, Universidad Mayor de San Andrés, Bolivia, [3]Academia Nacional de Ciencias, Bolivia & Instituto Nacional de Biodiversidad, Ecuador (srevollo@ttu.edu)

In several rodent species, reproduction is regulated by environmental characteristics. From this perspective, in tropical environments elevation can be an important variable, as resources at higher elevations fluctuate and become more seasonal. Seasonal breeding in mammals synchronizes the energetically expensive reproductive activities to coincide with the most favorable annual environmental conditions. Reproductive characteristics are expected to adjust to these conditions, becoming more seasonal at higher elevations because of the energetic cost of reproduction. We test this hypothesis by analyzing the reproductive patterns of two genera of sigmodontine rodents (*Akodon* and *Oligoryzomys*) co-distributed along a 3000 m elevation transect along the eastern cordillera of Bolivia. Reproductive data analyzed for females included the number of pregnant females per site/species and litter size. For males, the variable analyzed was testis size. Data were analyzed with a Generalized Linear Model. For both genera, there were more pregnant females in the transition period (*Akodon*: χ^2=6.26, g.l.= 1, p = 0.01; *Oligoryzomys*: χ^2=8.10, g.l.= 1, p = 0.004). *Akodon* exhibited larger testicles in the transition period at higher elevations (W = 239, p = 0.02), whereas in *Oligoryzomys*, testicles were larger at lower elevations (W = 256, p = 0.01). Litter size in *Oligoryzomys* was larger in the dry season at lower elevations (W = 60.5, p = 0.01). Elevation and season affect reproductive patterns, and their effects varied among the groups studied. Differences must be related to the plasticity of the species in response to the availability of food resource and species-specific energetic requirements.

Paper 7

DEVELOPMENT OF MAMMALIAN ARTIFICIAL VAGINA DESIGNS Jacquline Rich and Dara N. Orbach - Department of Life Sciences, Texas A&M University – Corpus Christi (jrich4@islander.tamucc.edu)

A variety of tools and techniques are utilized to collect semen from mammals, including manual stimulation, electroejaculation, and artificial vaginas. The quality of semen obtained using each technique is variable across species, although for livestock, artificial vaginas generally produce the highest quality semen. Species-specific artificial vaginas have been developed and made commercially available for several domestic mammalian species. We conducted a comprehensive literature review that examined trends in artificial vagina designs across mammalian species. The keywords "artificial vagina" and "semen collection" were searched in Web of Science and Google Scholar databases from 1914 to present, and article abstracts were screened to remove unrelated publications (e.g., non-mammalian taxa). Of the remaining articles, the material, shape, elasticity, and design augmentation of artificial vaginas were categorized. While some species-specific innovations have been introduced, only minor changes in the structure and material composition of artificial vaginas have been implemented. Artificial vagina designs differ minimally across species despite extensive variation in reproductive anatomy. The role of female reproductive anatomy in sexual selection may be vastly overlooked in semen collection device innovations. Future artificial vagina designs that incorporate species-specific anatomical features of the female reproductive tract may find improvements in semen quality by introducing elements of natural intromission. Research utilizing artificial vaginas based on reproductive anatomy may inform our understanding of reproductive evolution across mammalian taxa.

Paper 8 is to be considered for the Rollin Baker Award.

Paper 8

HUMAN PHARMACEUTICALS DETECTED IN DOLPHIN BLUBBER Anya Isabelle Ocampos[1], Makayla Guinn[1], Justin Elliott[2], Christiana Wittmaack[3], Carrie Sinclair[4], Hussain Abdulla[2], and Dara N. Orbach[1] - [1]Department of Life Sciences- Texas A&M University-Corpus Christi, [2]Department of Physical and Environmental Sciences- Texas A&M University-Corpus Christi, [3]Hydrosphere, [4]NOAA Southeast Fisheries Science Center – Marine Mammal and Turtle Division (aocampos@islander.tamucc.edu)

Pharmaceuticals are used in human and veterinary medicine for the treatment and prevention of disease(s). Although they generally contribute to health improvements, excessive intake of pharmaceuticals can result in immune resistance, drug dependency, and mortality, among other adverse effects. Pharmaceutical contaminants have been increasingly discovered in freshwater and marine ecosystems, possibly from wastewater effluent. The presence of pharmaceuticals in aquatic ecosystems is concerning due to possible health risks to marine biota and humans who unknowingly ingest pharmaceuticals via contaminated seafood. Dolphins are apex predators often used as sentinel species to assess the health of marine ecosystems because their lipid-rich blubber stores contaminants, such as persistent organic pollutants. We used blubber samples collected by remote biopsy from common bottlenose dolphins (*Tursiops truncatus*) in South Texas waters and Mississippi Sound and samples from postmortem dolphins to explore the presence of human pharmaceutical contaminants in the marine ecosystem. Targeted analysis of blubber samples using ultra-performance liquid chromatography coupled with OrbiTrap Fusion mass spectrometry (UPLC-OTMS) confirmed the detection of fentanyl and carisoprodol in samples from both Texas and Mississippi sites. Our study is the first to find evidence of human pharmaceuticals stored in marine mammals and has important implications for understanding the local ecosystem's health and risks to its inhabitants. Additional insights will be gained by quantifying pharmaceutical concentrations and determining LD_{50} in dolphins (*in vitro*), monitoring chronic effects of long-term pharmaceutical exposure, and non-targeted approaches to assess the presence of other pharmaceuticals.

Paper 9 is to be considered for the Bobby Baker Award.

Paper 9

ADENOVIRUSES FOUND IN BATS IN WEST TEXAS Jadance L. Black[1], Matt J. Van Sant[1], and Dana N. Lee[1] - [1]Department of Agriculture, Biology and Health Sciences, Cameron University, Lawton, Oklahoma (jadance.black@cameron.edu)

Bats are known reservoirs of various viruses including rabies, henipaviruses, ebola, and many more not yet identified. There is a demand for more research into discovering new types of viruses that bats carry since these viruses could potentially be zoonotic. Adenoviruses are among the types of viruses that can be zoonotic. Adenoviruses are double-stranded DNA viruses that can cause various respiratory illnesses in humans. It is important to determine if there are more species of bats that carry Adenoviruses as there have already been Adenoviruses detected in *Myotis velifer* species found in Oklahoma. In this study, 94 guano samples were collected from *Antrozous pallidus* (36), *Corynorhinus townsendii* (3), *Eptesicus fuscus* (3), *Lasiurus cinereus* (2), *Mormoops megalophylla* (4), *Myotis velifer* (2), *Myotis yumanensis* (5), *Parastrellus hesperus* (9), and *Tadarida brasiliensis* (30) in west Texas. I extracted DNA from the guano samples and performed nested PCR on them to amplify a 280-base pair long section of the DNA polymerase gene found in all Adenoviruses. After amplifying the DNA, there were 5 samples found positive for an Adenovirus. These 5 samples were collected from *A. pallidus* (3), *M. yumanensis* (1), and *T. brasiliensis* (1). All 3 positive samples from *A. pallidus* were genetically identical; however, they were different than both viruses found in *M. yumanensis* and *T. brasiliensis.* All 3 viral sequences were at least 10% different than any sequence found in GenBank. Future work includes screening additional individuals from these species collected at different locations in order to determine if bat adenoviruses are host specific.

Paper 10 is to be considered for the TSM Award.

Paper 10

SHOTGUN METAGENOMICS FOR THE ASSESSMENT OF DIET OF AMERICAN BLACK BEARS (*URSUS AMERICANUS*) Sufia A. Neha[1], Bonnie McKinney[2], Robert D. Bradley[1,3], Joseph D. Manthey[1], and Caleb D. Phillips[1,3] - [1]Department of Biological Sciences, Texas Tech University, [2]CEMEX USA, LLC, and Conservation and [3]Natural Science Research Laboratory (sneha@ttu.edu)

Understanding the dietary requirements of species is critical to elucidate their trophic interactions, can also inform conservation strategies, as well as human wildlife interactions in some instances. Understanding diets of wild animals from direct observation is challenging, but non-invasively collected fecal samples can provide valuable ecological information about species including diet, host genetics, microbiota, and parasites. In this pilot study, using shotgun DNA sequencing we reconstructed diet from six black bear scat samples collected in the Trans-Pecos ecoregion. Samples were homogenized and split into subsamples, some of which were selectively enriched for eukaryotic DNA then 2 × 150 bp sequenced on an Illumina NovaSeq 6000. Bear genomic reads were first identified by mapping to a reference bear genome, and remaining reads were aligned against the NCBI representative eukaryotic species database using BLAST. Eukaryotic DNA enriched samples showed a higher proportion of bear DNA, which will be useful for genotyping individual bears from scat samples. Enriched and non-enriched subsamples differed in their dietary species proportions, indicating that non-enrichment is better for providing an unbiased assessment of dietary composition. Sequencing effort was assessed through dietary species detection rarefaction curves, which plateaued around 40,000 reads and indicated that samples had been adequately sequenced to characterize diet. The relative abundance of dietary items showed that the top five most prevalent taxa found in the feces of black bears were *Triticum aestivum*, *Gryllus bimaculatus*, *Sorghum bicolor*, *Digitaria exilis* and *Gossypium hirsutum*. The results indicate a significant deviation in the dietary composition of black bears from wild species, with a notable shift towards incorporating a substantial portion of human-processed products (e.g., grain and cotton supplements used to augment bird

and deer feeders). This study provides a sample processing and analysis framework upon which larger studies of black bear ecology in the Trans-Pecos will be based.

POSTERS AT-A-GLANCE

Competing for the Clyde Jones Graduate Award (Poster 1):

1 – A PHYLO(MITO)GENOMIC PERSPECTIVE ON THE DIVERSIFICATION AND BIOGEOGRAPHIC HISTORY OF SOUTH AMERICAN LONG-NOSED MICE OF GENUS *OXYMYCTERUS* (RODENTIA: SIGMODONTINAE)
Nuria Bernal-Hoverud

Competing for the Clyde Jones Undergraduate Award (Posters 2-3):

2 – INTERNALIZING CLIMATE CHANGE: FECAL METABARCODING OF A SMALL MAMMAL COMMUNITY
Delaney F. Donnohue,

3 – CARNASSIAL RELATIVE BLADE LENGTH (RBL) AS AN INDICATOR OF CARNIVORAN DIETARY ECOLOGY
Duncan M. Vick

Competing for the Vernon Bailey Undergraduate Award (Posters 4-12):

4 – POPULATION FLUCTUATIONS OF RODENTS FROM 2019-2023 AT FIREBASE LIBBY, CALLAHAN COUNTY, TEXAS
Sunshyne Gwinn

5 – COMPARISON OF SAMPLING METHODS FOR DIVERSITY ASSESSMENTS OF SMALL-MAMMALS IN GYPSUM PRAIRIE OF WESTERN OKLAHOMA
Xander Molina

6 – SEASONAL AND INTERSPECIFIC VARIATION IN METABOLIC RATES (VO_2) AND HEMATOLOGICAL INDICES OF FREE-LIVING RODENTS IN NORTHWEST OKLAHOMA
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7 – MAMMALS OF CERRO DE ARCOS, LOJA PROVINCE, ECUADOR
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8 – CAMERA TRAPPING SURVEY OF THE MAMMALS OF ABILENE STATE PARK, TAYLOR COUNTY TEXAS
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9 – CUTANEOUS EVAPORATIVE WATER LOSS OF BATS FROM BIG BEND NATIONAL PARK
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10 – SPATIAL AND TEMPORAL RESPONSES OF SMALL CATS TO THE PRESENCE OF BIG CAT SPECIES IN CENTRAL BOTSWANA
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Leala Punjabi

Competing for the Vernon Bailey Graduate Award (Posters 13–29):

13 – AARDVARK COMMENSAL RELATIONSHIPS IN THE KALAHARI LANDSCAPE, BOTSWANA
Emily Mcghee

14 – POPULATION DIVERSITY OF MAMMALIAN SPECIES FOUND ON MODERATELY AND HIGHLY DISTURBED LAND PLOTS IN CUSHING, OKLAHOMA
Nadiya L. Cavallo

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16 – PRELIMINARY TRENDS IN SMALL MAMMAL POPULATIONS AFTER SIX YEARS OF MARK-RECAPTURE RESEARCH IN THE GYPSUM HILLS OF WESTERN OKLAHOMA
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Poster Presentation Abstracts

Poster 1 is to be considered for the Clyde Jones Graduate Award.

Poster 1

A PHYLO(MITO)GENOMIC PERSPECTIVE ON THE DIVERSIFICATION AND BIOGEOGRAPHIC HISTORY OF SOUTH AMERICAN LONG-NOSED MICE OF GENUS *OXYMYCTERUS* (RODENTIA: SIGMODONTINAE) Nuria Bernal-Hoverud[1,2], Pablo Rodrigues Gonçalves[1,3], and Jorge Salazar-Bravo[1] - [1]Department of Biological Sciences, Texas Tech University, [2]Wildlife Conservation Society, Bolivia Program, La Paz, Bolivia, [3]Instituto de Biodiversidade e Sustentabilidade (NUPEM/UFRJ), Universidade Federal do Rio de Janeiro, Macaé, RJ, Brazil (nbernalh@ttu.edu)

Hocicudos (*Oxymycterus*) are carnivorous sigmodontine rodents widely distributed in South America, south of the Amazon River, that have challenged scientists regarding their species-level relationships and diversification since the 18th century. Here, we present the first phylomitogenomic assessment of relationships among all 17 species currently recognized in *Oxymycterus*, inferring biogeographic processes associated with their diversification across landscapes. We combined mitochondrial genomes (16,417-12,260bp) of 12 *Oxymycterus* species and of 10 outgroup taxa (other sigmodontines, tylomines and neotomines) with previously published mitochondrial cytochrome b sequences (1143-400bp) of 5 *Oxymycterus* species to infer phylogenetic relationships and divergence times by maximum-likelihood analyses on IQtree. Ancestral geographic distributions and biogeographic processes were inferred under the likelihood model-based framework implemented on Biogeobears. *Oxymycterus* is recovered as a highly supported monophyletic group with *Juscelinomys* as sister-genus. Diversification within the genus was recent, spanning the last 2 million years. Species from Amazonia (Am), Arid Diagonal (AD), Brazilian Atlantic Forest (Af) and Pampas (Pa) represent the most basal offshoot of *Oxymycterus*, while species from Northern, Central (CA) and Southern Andes (except *O. inca*) constitute a monophyletic group within which relationships are poorly resolved among species lacking mitogenomic data (e.g. *O. hucucha, O. paramensis*). The divergence between *Oxymycterus* and *Juscelinomys* is marked by a major vicariant cladogenesis among the CA, AD, and Af. CA and Af then served as the ancestral areas for more recent and extensive diversification of the genus, and from where lineages secondarily dispersed to Am, Pa, and AD landscapes.

Posters 2-3 are to be considered for the Clyde Jones Undergraduate Award.

Poster 2

INTERNALIZING CLIMATE CHANGE: FECAL METABARCODING OF A SMALL MAMMAL COMMUNITY Delaney F. Donnohue, Michelle L. Haynie, and Matthew B. Parks - Department of Biology, University of Central Oklahoma (ddonnohue@uco.edu)

Climate change is expected to impact ecosystems, potentially with the most impactful changes at the lowest trophic levels. Our project involves collecting data from a long-term small mammal mark-recapture survey at the UCO Selman Living Laboratory (SLL) in northwestern Oklahoma, including vegetation and climate data, as well as physical and molecular characteristics of small mammal populations. Fecal pellets from trapped and ear-tagged rodents are collected for DNA extraction and subsequent 16S rRNA metabarcoding to assess the impacts of species, vegetation, climate, and season on rodent microbiomes. So far, fecal pellets from eight species of mice have been collected (total samples = 68), including six species from the Cricetidae family and two from the Heteromyidae family. DNA was extracted from fecal pellets using a Qiagen QIAamp Fast DNA Stool Mini extraction kit, PCR-amplified using 16S primers Pro341F-805R, and sequenced on an Illumina MiSeq at the University of Central Oklahoma. Preliminary results support: 1) differing microbiome composition between small mammal

species, 2) seasonal differences in microbiomes within small mammal species, 3) significant differences in alpha diversity between small mammal species, for example lower alpha diversity in *Perognathus* compared to *Onychomys leucogaster*, *Peromyscus maniculatus* and *Sigmodon hispidus*, and 4) beta diversity differentiation by feeding guild, for example granivores are separate from generalists, and both are distinct from herbivores and carnivores. Ultimately results of our study will add to our understanding of small mammal population dynamics and bring insight to higher level ecosystem processes including predation and dispersal. In the future, sampling will be increased to overcome statistical limitations, and additional factors including parasites and viruses will be integrated with microbiome data to provide a holistic picture of SLL small mammal population dynamics.

Poster 3

CARNASSIAL RELATIVE BLADE LENGTH (RBL) AS AN INDICATOR OF CARNIVORAN DIETARY ECOLOGY D. Vick[1], I. Brown[2], T. Clarke[3], A. Michelle Lawing[1], and L. Siciliano-Martina[4] - [1]Department of Ecology and Conservation Biology, Texas A&M University, [2]Department of Geology and Geophysics, Texas A&M University, [3]Department of Geography, Texas A&M University, [4]Department of Biology, Texas State University (vick.d.m@tamu.edu)

Carnivorans exhibit a wide variety of diets, ranging from the herbivorous diet of the giant panda (Ailuropoda melanoleuca) to the obligate carnivory observed in felids. The length of the trigonid blade relative to the total carnassial tooth length (known as the relative blade length, or RBL) is functionally related to shearing and grinding ability in terrestrial carnivorans, whereas a greater RBL value correlates to a greater degree of carnivory. To explore the nature of this relationship, we extracted RBL values from published studies representing a sample of over 200 fossil and modern carnivoran species. This data allowed us to evaluate the variation in RBL values across Carnivora and provided new areas of inquiry. There is a clear distinction in RBL values between most extant caniforms and feliforms. The caniforms (e.g., bears, skunks, martens) possessed a wide range of RBL values under 0.8, suggesting that members of the group typically have a less carnivorous and more generalist diet than felids and their closest relatives. Felids had uniform RBL values of 1.0, leading to further questions about the ecological and evolutionary limits to the morphospace associated with this functional trait. Dental measurements of fossil specimens were used to track this morphological disparity through time, revealing an early appearance of maximal RBL values in the evolution of Carnivora. The reliability of relative blade length as a dietary indicator and its presence in many taxa provides a useful pathway for research into the evolution of this diverse and ecologically vital taxonomic order.

Posters 4-12 are to be considered for the Vernon Bailey Undergraduate Award.

Poster 4

POPULATION FLUCTUATIONS OF RODENTS FROM 2019-2023 AT FIREBASE LIBBY, CALLAHAN COUNTY, TEXAS Sunshyne Gwinn and Joel Brant - Department of Biology, McMurry University (gwinn.sunshyne@mcm.edu)

Documenting population fluctuations in an area can serve as a proxy for local environmental changes. From 2019-2023 we have surveyed rodent populations on a small property, Firebase Libby, owned by McMurry University in Callahan County, Texas. Firebase Libby is a 160-acre property containing two habitats: grassland (~60 acres) and woodland (~100 acres). Rodents were obtained using a wagon wheel array of traps located in each habitat. Both arrays were set and allowed to run two nights each month. New individuals were measured, tagged with an RFID chip, and released at the point of capture. Recaptured individuals were identified and released. With the data collected, we analyzed the rodent diversity by calculating the richness, dominance, evenness, and diversity of each habitat. Throughout the past 5 years, 8 species of rodents have been collected on the property. Within the woodland, *Peromyscus attwateri* dominate the area with population peaks in 2021 and 2022. In the grassland *Baiomys taylori* & S*igmodon hispidus* both peaked during 2021 and 2022 and have essentially disappeared during 2023. In

both habitats, rodent populations peaked during 2021 and 2022. A potential environmental factor that may have influenced this fluctuation is precipitation. 2020 and 2021 were the wettest years during this period with an annual precipitation rates of 26.40 and 24.43 inches respectively. 2022 was a dryer year with 14.63 inches. Less rainfall negatively impacts vegetative growth, which impacts the food resources for rodents. The snake population followed a similar population pattern during these years.

Poster 5

COMPARISON OF SAMPLING METHODS FOR DIVERSITY ASSESSMENTS OF SMALL-MAMMALS IN GYPSUM PRAIRIE OF WESTERN OKLAHOMA Xander Molina and Richard Doleman - Department of Biology, University of Central Oklahoma (xmolina@uco.edu)

Habitat loss and fragmentation are major threats to global biodiversity, negatively affecting all major taxonomic groups. Small mammal diversity and community composition represent powerful tools for understanding these threats. Because they occur in high abundance, are ubiquitous, and are active year-round, they serve as a power tool for examining aspects of the landscape. Small mammals also provide important ecological services including dispersal of native plant seeds, spores, and aeration of soil through burrowing. Together these contribute to increased rates of nutrient transfer throughout the landscape. Surveys of diversity and evenness commonly use one of two spatial designs, transects and grids. To compare these two methods our project is working in collaboration with an ongoing small mammal diversity study being performed by a colleague at the Selman Living laboratory in western Oklahoma. Our project has been comparing diversity and evenness estimates using linear transects with those estimates generated by the current study using grids. Five transects, each containing 50 Sherman live traps, will be used to survey small mammals throughout the approximately 135 ha of Selman laboratory property. Transects will be sampled for 3 consecutive nights using current established live trapping guidelines used by the American Society of Mammalogists. Species diversity and evenness will be compared with data collected from our collaborators grid based spatial design. Data collection for 2 seasons has been performed as of writing this abstract, spring and summer. To date, transect success is averaged at 12%, while grid success is 6%.

Poster 6

SEASONAL AND INTERSPECIFIC VARIATION IN METABOLIC RATES (VO_2) AND HEMATOLOGICAL INDICES OF FREE-LIVING RODENTS IN NORTHWEST OKLAHOMA Yulianis Pagan, Jess Warr, Richard Dolman, Michelle Haynie, and Christopher G. Goodchild - Department of Biology, University of Central Oklahoma (ypagan@uco.edu)

Seasonal and interspecific variation in organismal metabolic rates is a major physiological factor underlying how animals respond to climatic events (e.g., drought), disturbance (e.g., wildfires), and exposure to diseases (e.g., hantavirus). Hematological indices (hematocrit, hemoglobin concentration, leukocyte counts) are closely associated with organismal metabolic rates and disease defense. In this study, we measured organismal metabolic rates indirectly via oxygen consumption and collected blood samples to measure hematological indices in free-living rodents trapped at the University of Central Oklahoma Selman Living Laboratory in Northwest Oklahoma. We collected data primarily from *Peromyscus* spp. and *Sigmodon hispidus* over six trips occurring in January, March, June, and October 2022-2024. A smaller dataset was also curated for various other species: *Chaetodipus hispidus*, *Onychomys leucogaster*, *Neotoma micropus*, and *Microtus ochrogaster*. Data collection is ongoing, and preliminary analysis indicates both seasonal and interspecific variation in metabolic rate and hematological indices.

Poster 7

MAMMALS OF CERRO DE ARCOS, LOJA PROVINCE, ECUADOR Ian Massey[1], Nicolas Tinoco[2], M. Alejandra Camacho[2], Santiago F. Burneo[2], and Thomas E. Lee, Jr.[1] - [1]Department of Biology, Box 27868, Abilene Christian University, Abilene, TX 79699 USA, [2]Sección Mastozoología - Museo de Zoología, Pontificia Universidad Católica del Ecuador, Quito, Ecuador (massey.ianjames@gmail.com)

We surveyed the mammalian diversity of the Cerro de Arcos Reserve in Loja Province, Ecuador. The habitat can be described as mountain paramo with bogs, large rock cliffs and outcroppings. of the western Andes. The location is at 3° 34' 1" S, 79° 26' 5" W, and the elevation is between 3,400 and 3,800 m. The habitat is alpine grassland with steep mountain slopes, high wind and induced pine forests. This study will compare the ecology of Cerro del Arcos with other Andean studies of mammals conducted over the last twenty years. We spent three weeks trapping with Sherman traps, tomahawks, and pitfalls for a total of 4,305 trap nights. The mammalian species we documented include: *Cryptotis montivagus, Akodon mollis, Microryzomys latissimus, Thomasomys auricularis, Thomasomys caudivarius*, and *Thomasomys taczanowskii*. We set seven game cameras for a total of 147 trap nights and observed three species: *Pseudalopex culpaeus*, *Sylvilagus andinus*, and *Odocoileus virginianus*.

Poster 8

CAMERA TRAPPING SURVEY OF THE MAMMALS OF ABILENE STATE PARK, TAYLOR COUNTY TEXAS Ray Ramos[1], Emily Thornock[2], Avy Langston[2], Harrison Smith[2], and Thomas E. Lee, Jr.[1] - [1]Department of Biology, ACU Box 27868, Abilene Christian University, Abilene, Texas 79699, [2]Department of Agriculture and Environment Sciences, Abilene Christian University, Abilene, Texas 79699 (rayramos0817@icloud.com)

This is the fifth year of our camera trapping survey of Abilene State Park. This camera trapping survey of large to medium sized mammals was conducted from early September to early November 2023. This camera trapping survey was part of a national effort in the snapshot program. In this study, we used 12 browning strike force HD cameras. Locations were chosen to avoid human interference, maximize habitat diversity and wildlife encounters. In this survey we recorded eleven species of mammals. The species encountered include *Canis latrans, Dasypus novemcinctus, Lynx rufus, Mephitis mephitis, Neotoma* sp., *Odocoileus virginianus, Procyon lotor, Sciurus niger, Sus scrofa, Sylvilagus* sp. and *Urocyon cinereoargenteus.* The three most commonly photographed animals were *Odocoileus virginianus, Sus scrofa* and *Canis latrans*. These data indicate that like the rest of Texas a large *Sus scrofa* population is affecting Abilene State Park and causing conservation problems such as degradation of habitat and threats to ground dwelling animals. In addition to documenting mammalian species present in the Abilene State Park and their abundance, some interesting natural history findings were recorded.

Poster 9

CUTANEOUS EVAPORATIVE WATER LOSS OF BATS FROM BIG BEND NATIONAL PARK Alexandra Moya, Dana N. Lee, and Matt J. Van Sant - Department of Agriculture, Biology, and Health Sciences, Cameron University (alexandra.moya@cameron.edu)

The ghost-faced bat (*Mormoops megalophylla*) is a species found in tropical regions throughout Mexico, Central America, and northern parts of South America. However, some populations reside in the semi-arid and arid regions of Arizona, Texas, and the Baja Peninsula. We are interested in understanding mechanisms that allow this tropical adapted species to survive in contrasting habitats. Wings of bats may be key routes for evaporative water loss due to their lack of hair and large surface to volume ratio. Reducing rates of cutaneous evaporative water loss (CEWL) may allow bats to inhabit conditions that are more arid. Our goal was to determine if the ghost-faced bat has reduced rates of CEWL compared to other

bat species. We collected bats in Big Bend National Park during summer of 2023 using mist nets and harp traps. We measured CEWL from the ventral surfaces of the abdomen and the plagiopatagium using a Delfin VapoMeter. We present a comparison of CEWL from the following species: *Antrozous pallidus* (30), *Corynorhinus townsendii* (1), *Eptesicus fuscus* (2), *Lasiurus cinereus* (1), *Mormoops megalophylla* (3), *Myotis ciliolabrum* (1), *Myotis thysanodes* (1), *Myotis yumanensis* (4), *Parastrellus hesperus* (8), and *Tadarida brasiliensis* (29).

Poster 10

SPATIAL AND TEMPORAL RESPONSES OF SMALL CATS TO THE PRESENCE OF BIG CAT SPECIES IN CENTRAL BOTSWANA William N. Stephens, Daniel Scognamillo, and Michael Tewes - Caesar Kleberg Wildlife Research Institute, Texas A&M University–Kingsville, Kingsville, TX, 78363, USA (William.stephens@students.tamuk.edu)

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.

Poster 11

OCELOT DISPERSION AND GUZZLER USE ON LAGUNA ATASCOSA NATIONAL WILDLIFE REFUGE Hunter G. Vasquez, Daniel G. Scognamillo, and Michael E. Tewes
Caesar Kleberg Wildlife Research Institute, Texas A&M University - Kingsville, Kingsville, TX, 78363, USA (hunter.vasquez@students.tamuk.edu)

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 oneguzzler 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.

Poster 12

TREATMENT PLANT IMPACTS ON BEHAVIORAL STATES OF BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS*) IN REDFISH BAY AND CORPUS CHRISTI BAY Leala Punjabi[1], William McGlaun[2], and Dara N. Orbach[1] - [1]Department of Life Sciences, Texas A&M University-Corpus Christi, [2]Texas SeaLife Center (lpunjabi@islander.tamucc.edu)

In the Texas Coastal Bend, there are 45 chemical and wastewater treatment plants along the perimeter of bays. Treatment plants can release volatile organic materials into the ocean that impact the development and survival of wildlife. Due to their lipid-rich blubber and status as apex predators, dolphins are used as bioindicators of their ecosystem. We compare the behavioral states of bottlenose dolphins (*Tursiops truncatus*) in Corpus Christi Bay and Redfish Bay, Texas, based on distances from treatment plants. Dolphins < 1 km of treatment plants are predicted to exhibit passive behavioral states (slow travel, mill, rest) while those > 1 km are predicted to exhibit active behavioral states (play, mate, fast travel, socialize, leap, feed). During quarterly boat-based transect surveys between 2021-2023, dolphin behavioral states and GPS coordinates were recorded for each group encountered. Data from 75 surveys are being mapped using the Euclidean distance tool in ArcGIS with non-parametric goodness of fit tests to assess patterns of behavioral variation. Understanding the possible impacts of local treatment plants on dolphin behavioral states can assist in planning future infrastructure to minimize behaviorally important regions.

Posters 13-29 are to be considered for the Clyde Jones Graduate Award.

Poster 13

AARDVARK COMMENSAL RELATIONSHIPS IN THE KALAHARI LANDSCAPE, BOTSWANA Emily Mcghee[1], Heather A. Mathewson[1], and Thomas Wayne Schwertner[1] - [1]Department of Wildlife and Natural Resources, Tarleton State University (emily.mcghee@go.tarleton.edu)

The Kalahari landscape of Botswana is an arid to semi-arid sandy savanna ecosystem home to the “earth pig,” otherwise known as the aardvark (*Orycteropus afer*). Aardvarks are considered ecosystem engineers and keystone species due to their prolific excavation abilities. They create many subterranean shelters across the landscape that are large, durable, and easily utilized by other species. Many mammals and birds use vacant aardvark burrows, but, to date, no research has evaluated the impact of livestock disturbance on the ecology of vacant aardvark burrows. Our objectives were to 1) identify what species use vacant aardvark burrows and 2) assess the impact of livestock disturbance on commensal species richness, diversity, and the number of detections of wild species using burrows. Our study site was on the 1,870-ha Cheetah Conservation Botswana property located approximately 15 miles from Ghanzi, Botswana. The property is a working cattle ranch that employs rotational grazing. We opportunistically searched for aardvark burrows within the study area, and upon discovery, deployed a single camera aimed at each burrow entrance. We used ten motion-activated cameras to rotationally survey 13 vacant aardvark burrows from early March to late November 2023.The cameras took 15-second-long videos 24 hours a day, and we checked them for data every two to three weeks. Using the raw video data, we ran descriptive analyses to determine what species occurred at aardvark burrows and what behaviors they exhibited. We also calculated species richness and diversity using the Shannon Diversity Index. We will conduct further analysis throughout November and December 2023. We will run generalized linear models to assess the impact of livestock disturbance on species richness, diversity, and number of detections of wild species using burrows. Our research will help develop effective conservation and management plans for aardvarks and their commensal species in the Kalahari landscape.

Poster 14

POPULATION DIVERSITY OF MAMMALIAN SPECIES FOUND ON MODERATELY AND HIGHLY DISTURBED LAND PLOTS IN CUSHING, OKLAHOMA Nadiya L. Cavallo, Jessica L. Warr, Richard W. Dolman, and Michelle L. Haynie - Department of Biology, University of Central Oklahoma (ncavallo@uco.edu)

Wildlife populations are susceptible to habitat fragmentation caused by the harvest of natural resources, industrial infrastructure, urbanization, roads, and conversion of land for agriculture. In Cushing, Oklahoma, there are two privately owned land plots—one described as moderately disturbed due to hayed fields and occasional use of farm equipment, the other described as heavily disturbed due to orphaned oil wells on the property. Floristic Quality Assessment will be used to measure disturbance levels between the two sites. Preliminary data was collected during a pilot study conducted from July 2023 to December 2023. I did a general mammalian survey using Sherman traps, Tomahawk traps, and Reconyx Hyperfire camera traps to gather data on mammalian communities from both properties. Data will be analyzed by either a Goodness of Fit Test or Shannon's diversity index. Resulting data will be used to determine any variation within the communities and identify impacts of petroleum extraction on species diversity.

Poster 15

ECOLOGICAL DISTURBANCE IN THE ANTHROPOCENE: LEGACY EFFECTS OF ORPHANED WELLS ON VEGETATIVE COMMUNITIES AND METABOLIC PHENOTYPE OF FREE-LIVING RODENTS Jess Warr, Richard Dolman, and Christopher Goodchild - Department of Biology, University of Central Oklahoma (jtredway@uco.edu)

Persistent organic pollutants have been studied intently for the last thirty years, and many are known to be mutagenic, some carcinogenic. Among the most commonly studied environmental organic contaminants are polycyclic aromatic hydrocarbons (PAHs), 16 of which are listed by the United States Environment Protection Agency (US EPA) as priority contaminants of concern. Many PAHs are found in crude oil and can remain in the environment long after crude oil spills have occurred. While catastrophic large marine oil spills often receive considerable media attention, smaller-scale inland spills occur much more frequently, resulting in legacy PAH contamination. Oklahoma currently has 15,965 documented orphaned oil rigs that were operated under less regulatory oversight. Oklahoma Energy Resources Board (OERB) is working diligently to plug orphaned wells however, the toxic legacy effects on surrounding ecosystems are not well understood. Using 2 separate field sites in Cushing, Oklahoma, we collected soil samples to compare surface PAH concentrations. We targeted areas surrounding unplugged oil wells and will compare soil PAH concentrations to EPA soil screening levels (SSLs) and a reference location having no known recent crude oil production activity. To assess site-specific disturbance, we will conduct vegetative surveys to generate Floristic Quality Assessments (FQAs) for each site. In accordance with substantial data showing PAH exposure causes hematological damage, altered immune function, and shifts in organismal metabolic rates, we hypothesize legacy PAH contamination will lead to physiological differences in free-living *Peromyscus* populations inhabiting the individual sites. We will measure white blood cell differentials, packed cell volume, hemoglobin concentration, and organismal resting metabolic rate. Collectively, this data will allow us to evaluate legacy effects of unplugged oil wells on multiple ecosystem components.

Poster 16

PRELIMINARY TRENDS IN SMALL MAMMAL POPULATIONS AFTER SIX YEARS OF MARK-RECAPTURE RESEARCH IN THE GYPSUM HILLS OF WESTERN OKLAHOMA

Claire Wiley[1], Francisca M. Mendez-Harclerode[2], Gloria M. Caddell[1], Chad B. King[1], and Michelle L. Haynie[1] - [1]Department of Biology, University of Central Oklahoma, [2]Department of Biology, Bethel College (cwiley6@uco.edu)

The purpose of this project is to monitor changes in small mammal populations and communities over multiple generations to determine what factors affect how the populations and communities change over time. In March of 2018, a permanent trapping web was established at the University of Central Oklahoma's Selman Living Lab (SLL). Two additional permanent webs were established in June of 2018. The SLL is located in the gypsum hills of Woodward County in western Oklahoma. Surveys of the 3 webs are conducted for 3 nights, 4 times a year, and include collection of mammalian and vegetation data. Climate data also is obtained for each day of the trip; monthly and yearly climate data also will be assessed. To date, 21 mammalian and 20 vegetation surveys have been conducted. Based on preliminary data, seasonal and habitat trends have been detected in mammalian populations, with the lowest capture numbers occurring in summer and reaching peak numbers in spring. The trapping web located on mixed, slightly disturbed habitat has the most diverse community and the most number of captures/recaptures. In the future, the animal, climate, and vegetation data will be used to build mathematical models that can be used to determine which factors have the largest impact on population and community persistence.

Poster 17

EXPLORING TIME: UNRAVELING THE RELATIONSHIP BETWEEN BODY MASS AND ACTIVITY PATTERNS IN NEOTROPICAL LARGE RODENTS

Lauren Slack and Ivan Castro-Arellano - Department of Biology, Texas State University (sld233@txstate.edu)

Niche conservatism has been reported among and within species because these species will tend to inhabit similar environments. The Neotropics have a variety of environments such as tropical forests, savannahs, and deserts that allow a diversification of ecological relationships. Within these variations, there is a potential gradient of diel activity among large rodent species. Three closely related families of rodents- Cuniculidae, Caviidae, and Dasyproctidae- have large species that show a wide range of body masses, ranging from 0.4 kg to 65 kg. Since these species are consistently recorded in camera traps, we are using a large repository of camera trap data to evaluate variation in activity patterns in contrast to body mass among species in our focal group. Circular statistics will be used for diel activity pattern characterizations and by using a null model approach with an algorithm developed for time analyses (i.e., ROSARIO) we will evaluate for any geographical variation in activity patterns within each studied species. Our expectation is that species with the largest body masses will show consistent activity patterns among sites (i.e., Intraspecific temporal niche conservatism) and less activity directionality because they tend to have longer foraging activity times due to use of low-quality food items. In contrast, species with the smallest body masses will tend to have high activity directionality and show variation among sites as they are more likely to be time specialists because they use shorter foraging times by consuming items of higher nutritional value. Although the project is ongoing, its anticipated outcomes hold the promise of advancing our understanding of the relationship between activity patterns and body mass.

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FEEDING IDENTITY AND WING MORPHOLOGY: PHENOTYPIC VARIABILITY WITHIN THE FAMILY PHYLLOSTOMIDAE (ORDER: CHIROPTERA) Albrecht M. Katelyn[1], Cody W. Thompson[2], Robert D. Bradley[1,3] and Richard D. Stevens[3,4] - [1]Department of Biological Sciences, Texas Tech University, [2]University of Michigan, [3]Natural Science Research Laboratory, Museum of Texas Tech University, [4]Deparmtent of Natural Resources Management, Texas Tech University (katelyn.albrecht@ttu.edu)

Phenotypic variability among Chiropterans is pervasive across a multitude of geographical, physiological, behavioral, and ecological parameters. This diversity is evident especially within the Family Phyllostomidae (New World leaf-nosed bats), which occur across broad environmental and latitudinal gradients and contain species with high degrees of specialization, particularly with respect to feeding guild identity ranging from sanguivory to insectivory. The inherent variability across Phyllostomids may indicate differential expression of morphological elements related to functional elements that, when compared, may align to ecological radiation or be driven by phylogenetic relationships between species or other taxonomic subunits. Full body micro-CT scans were obtained for 114 species of alcohol preserved specimens from both the Texas Tech University Natural Science Research Laboratory (NSRL) and the University of Michigan Museum of Zoology (UMMZ). Four genera per feeding identity were then selected for analysis, excluding sanguivores with three representative species, with adult males and females represented by two samples each to account for sexual dimorphism. Isolation and measurement of elements, performed using segmentation tools in the imagining softwares Dragonfly and 3DSlicer, include all bones composing the right forelimb from the humerus to distal phalanges, excluding the carpals. Regression and covariation models were used to quantify variance among characters and assess possible allometric and modular components of the skeletal components of the wings at a clade level. Additionally, matrix decomposition was performed to partition variability to describe the relevant contributions of ecological variability and evolutionary trajectory towards phenotypic diversity. Allometric and modular relationships are expected to align to feeding behavior and phenotypic radiation that could be responsible for specialized morphological changes seen in such a large, highly diverse taxa. This analysis, paired with the creation of a comprehensive digital data base, promotes the advancement of highly detailed, expansive morphological analysis in highly expressive, even cryptic, species and functional groups.

Poster 19

TEMPORAL NICHE CONSERVATISM AND COMMUNITY OVERLAP IN NEOTROPICAL BAT POPULATIONS Kaitlyn Patterson and Ivan Castro-Arellano - Department of Biology, Texas State University (kap153@txstate.edu)

Studies of food and habitat niche partitioning have a long standing in ecology. However, studies about the role of temporal activity patterns as a potential mediator of species interactions are scarce. Knowledge about mammalian temporal niches could aid our understanding of patterns of species richness and composition in each community, a major goal in ecology. The purpose of this project is to evaluate intraspecific temporal niche conservatism against geographical variation while concurrently assessing temporal overlap within each local community in relation to resource use in neotropical bats. Mist-netting data being contributed from various researchers will be analyzed with a null model approach using a specific algorithm (i.e., ROSARIO) developed for time analyses. Circular statistics will be used for diel pattern characterizations and pairwise species comparisons at local communities. The activity patterns will then be compared within each species to ascertain if geographical variation or temporal niche conservatism is the dominant pattern for neotropical bats. We expect species will exhibit intraspecific temporal niche conservatism over geographical variation, as well as steady patterns of interspecific

temporal overlap within local sites. Overall results from this study will continue to augment our understanding of the structure of neotropical bat assemblages.

Poster 20

ADAPTIVE BATS AMIDST DECLINING FORESTS: UNRAVELLING THE IMPACT OF LAND-USE CHANGES ON BAT ASSEMBLAGE STRUCTURE IN BANGLADESH Md Ashraf Ul Hasan and Tigga Kingston - Department of Biological Sciences, Texas Tech University, Lubbock, Texas (md-ashraf.ul-hasan@ttu.edu)

Bangladesh's forest ecosystem is rapidly declining due to extensive human population growth and anthropic activities. Bats play a pivotal role within forest ecosystems, serving as indicators of biodiversity health and exhibiting sensitivity to land-use changes. However, there is a need for data on bat species diversity and their response to land-use changes in Bangladesh, a country lacking bat research. Our goal was to assess the impact of land-use changes on bat assemblages in three protected areas (PAs) of northeast Bangladesh. We categorized PAs into two land-uses: forest and degraded based on the level of habitat modification. Each PA contained two localities representing differing land-uses in proximity, establishing a paired design for comparison. We captured bats using four-bank harp traps and mist nets in the summers of 2022 and 2023, dedicating 6201 hours of mist netting and 779 hours of harp trapping. Our captures yielded 892 individuals across 17 species within 5 families. Species richness was neither significantly different between land-uses, nor among the localities, species abundance varied significantly between land-uses, and across different localities, showing a higher proportion of captured individuals in degraded habitats compared to forests. This might indicate that changes to natural habitats could be affecting the population of individual species without affecting the overall diversity. Beta diversity between the land-uses was 0.42, showed no significant differences. This finding suggests both land-uses support comparable species composition. Conclusively, while natural forests and degraded habitats within the PAs continue to serve as refuges for bat assemblages in northeast Bangladesh, our study emphasizing the need for further research on the adaptability of bats persisting in both natural and degraded habitats and identify conservation approach that optimizes the conservation value of degraded habitats.

Poster 21

INFLUENCE OF FRAGMENTATION ON BAT-PLANT INTERACTION NETWORKS Tatiana Velásquez-Roa[1,2] & Oscar E. Murillo-García[2] - [1]Department of Biology, Texas State University, [2]Department of Biology, Universidad del Valle, Colombia (yxh11@txstate.edu)

Anthropogenically driven fragmentation reduces species diversity and changes species compositions within tropical forests, causing changes in the structure of interaction networks, which could trigger effects in important processes related to plant reproduction and forest maintenance. Currently there is a need to characterize the effects of fragmentation on the structure of plant-animal interaction networks in threatened ecosystems such as the tropical dry forest (TDF). For this purpose, information on the interactions between bat species and the plants consumed by them was collected in ten remnants of TDF in Colombia. In addition, a characterization of each remnant was done using landscape metrics, and it was related to structural properties of the interaction networks (nestedness, modularity, and robustness). In addition, for the purpose of including the effects of spatial variation in the interaction bat-plant on the modularity and robustness, the multilayer interaction network focus was used. Finally, we calculated the beta diversity of interactions between remnants, decomposed it into species and interaction turnover components, and assessed whether it was associated with remnant distance. We captured 1,142 bat individuals grouped into 36 species (28 phyllostomids/19 frugivorous) and collected more than 19,600 seeds from their droppings. Our results suggest fragmentation influences nestedness and robustness at the different scales studied (remnant, 2.5 km buffer and 5 km buffer). We find that species and interaction composition became similar in the nearby remnants. Our results prove that the different types of approaches used in this study gave us an integrative view of the bat-plant interaction behaviour and how they are related to landscape characteristics. The previous statement is key and fundamental because this

study focused on the most threatened ecosystem of Colombia, and its outcomes can aid restoration actions in the tropical dry forest.

Poster 22

WILDLIFE ROADKILL IN COLOMBIA: HISTORICAL REVIEW AND EVALUATION IN AN ELEVATIONAL TRANSECT IN THE CENTRAL MOUNTAIN RANGE OF THE DEPARTMENT OF CALDAS (COLOMBIA) Andres Fernando Tamayo Zuluaga[1] and Héctor E. Ramírez-Chaves[1,2] - [1]Departament of Biological Sciences, Universidad de Caldas, Manizales, Caldas, Colombia, [2]Centro de Museos, Museo de Historia Natural, Universidad de Caldas, Manizales, Caldas, Colombia (andres.27120138654@ucaldas.edu.co)

Rapid global economic growth has led to significant degradation of ecosystems and increased negative human-wildlife interactions. One major risk factor of development for wildlife populations is extensive road expansion as it causes direct deaths plus secondary effects on wildlife assemblages (i.e., fragmentation). This study focuses on road impacts on wildlife in Colombia, aiming to compile information on wildlife roadkill and the broader impacts of roads on ecosystems. The research gathered data from 45 studies related to roads and wildlife in Colombia, with 60% of these studies focused on recording mortality data. These studies spanned 17 departments, with the Andean region having the highest concentration of research (44%). A total of 192 wildlife species were documented as roadkill in Colombia, with mammals being the most frequently affected group. The common opossum (*Didelphis marsupialis*) stood out as the species with the highest number of roadkill records. Field surveys were conducted over a 46-kilometer road in the department of Caldas, covering agricultural, urban, industrial, and protected areas for 15 months. The findings revealed 70 individuals from 26 vertebrate species apparently killed by vehicles. The roadkill events were more prevalent in transition curves and agricultural areas, influenced by factors such as poor visibility, vehicle speed, and the availability of food resources in agricultural zones. The study contributes significantly to the understanding of roadkill wildlife in Colombia, identifying the most affected species and key variables influencing collisions between vehicles and wildlife. The information underscores the need for conservation efforts, including the implementation of wildlife corridors, speed reduction measures, and improved road design to mitigate the impact of roads on biodiversity. Awareness campaigns and policy interventions are also crucial for addressing the environmental consequences of road development in Colombia.

Poster 23

MORPHOLOGICAL VARIATION OF GRAY FOX (*UROCYON CINEREOARGENTEUS*) SKULLS ACROSS TIME Samantha L. Lamb and Leila Siciliano-Martina - Department of Biology, Texas State University (sll101@txstate.edu)

The rate of urbanization has increased substantially over the past century causing novel environmental conditions and changing the way animals interact with their environment. Urbanization can lead to differences in the diets and ecological resources available to wildlife and has been associated with changes in red fox (*Vulpes vulpes*) skull morphology including shorter and wider snouts. Gray foxes *(Urocyon cinereoargenteus*) have a wide geographic range and are found in rural to urban landscapes, from the countryside to city backyards, making them an ideal study species to assess how anthropogenically changed areas can impact mesocarnivore morphology, however; the effects of urbanization have yet to be explored in the species. To evaluate whether gray fox morphology has changed over time with increased urbanization, we used 2D geometric morphometric techniques to analyze 261 skull photos. We ordinated the morphological data using a Principal Component Analysis and extracted the PCs as unique shape variables. We performed linear regressions and ANOVAs exploring the relationship between the date of specimen collection (1887 to 2008) and skull shape (PC1 and PC2) and size (centroid). We found a significant effect of time on morphology related to snout length and width although the relationship was not linear. Given that previous research has found differences in skull morphology related to differing diets in urban populations, we expected to find a linear change in

morphology from the early 1900s to the present. However, our results did not indicate a clear relationship, perhaps suggesting that this species has responded to urbanization differently than red foxes. We will analyze these variations further in future studies incorporating specimen locality and more specific proxies for urbanization. As urbanization continues to expand, understanding how organisms respond will provide valuable information about the likelihood of species persistence and their ability to adapt to new environments.

Poster 24

TEMPORAL NICHE OF MESOCARNIVORES IN RELATION TO CANOPY COVER ALONG URBAN-RURAL GRADIENTS ACROSS USA Alexandra Lofland and Ivan Castro-Arellano - Department of Biology, Texas State University (asl74@txstate.edu)

As the human population continues to grow, expansion of anthropogenic activity and development continues to alter the diversity, distribution and ecological patterns of wildlife species. Previous studies have shown that wildlife alter diel activity patterns in response to these changes; however, evidence for how these shifts in diel activity patterns correlate with changes in habitat and landscape use are lacking. Canopy cover is a crucial component of vegetation from landscape to microhabitat levels. As anthropogenic activity further reduces areas of refuge for wildlife, canopy cover can be used for protective cover from threats such as predators, human presence, traffic, light, and noise. Thus, this study aims to determine how diel patterns of canopy cover use among mammalian carnivores are related to anthropogenic effects along urban-rural gradients. Using impervious cover and canopy cover data from GIS and camera trap data from a large repository with a national level coverage, we will use circular statistics to analyze how diel activity related to canopy cover use varies among natural fragments, suburban landscapes, and highly urbanized landscapes. We expect that diel patterns of canopy cover use will vary significantly between natural fragments and urban landscapes with increased imperviousness (i.e., anthropogenic development). We also predict that canopy cover use will increase in relation to urbanization as mammalian carnivores attempt to hide from anthropogenic activity. This study has strong management implications as anthropogenic activity increasingly encroaches on natural areas, changes the landscape, and alters patterns of wildlife activity.

Poster 25

DO ASIAN UNGULATES CONSERVE TEMPORAL NICHES? ECOLOGICAL, EVOLUTIONARY AND CONSERVATION IMPLICATIONS Namrata Bhandari and Ivan Castro-Arellano - Texas State University, San Marcos, TX (lzy18@txstate.edu)

Ungulates are relevant for ecosystem dynamics through herbivory, seed dispersal, seed predation, and being important prey for large carnivores. But anthropogenic factors are causing widespread loss of ungulates worldwide. Understanding the behavioral ecology of daily activity patterns of ungulates can not only aid their conservation but also provide an opportunity to get insight into mammalian temporal niches. The tendency of species and clades to use similar diel activity patterns over time (i.e., temporal niche conservatism) could be relevant for ecological processes. Animal activity patterns are dependent on body mass through metabolic and thermoregulatory processes and thus our expectation is that body mass will affect diel patterns of ungulates: Large herbivores require higher energy, so they will spend longer time foraging, are tolerant to low nutritional food, and tend towards being cathemeral (low directionality), whereas small herbivores likely spend less time foraging, feed on high nutritional food and will tend to be time specialists (high directionality). This study will evaluate these relationships using data from sites in Asia and Texas ranches (i.e., exotic populations). We will use time-stamped camera trap data from freely available data repositories plus fieldwork in Texas. Data will be analyzed using R statistical programming (Activity and Overlap packages), Oriana circular statistical software, and ROSARIO to determine Kernel density estimation and daily activity overlaps among and within species. Findings from this study will show the influence of body mass of different ungulates on activity patterns from local and global scales, which aids in making informed decisions for their management and conservation.

Poster 26

ECOLOGY AND EVOLUTIONARY IMPLICATIONS OF DIEL TEMPORAL NICHE CONSERVATISM IN AFRICAN EUUNGULATES Brier Klossing and Ivan Castro-Arellano - Department of Biology, Texas State University (vtg22@txstate.edu)

Mammalian activity patterns have been of research interest but proved difficult to study. Recent technological advances have made it possible to address big questions in this area. Activity patterns are likely influenced by body mass, which directly impacts species through metabolic and thermoregulatory processes. For example, large herbivores tend to forage more on abundant items of low nutritional value, often having a trend towards cathemeral activity (i.e., low activity directionality). While small herbivores tend to forage on rarer items of high nutritional value, achieving their foraging requirements within a shorter time span and thus tending to be time specialists (i.e., high activity directionality). If body masses are similar among closely related mammalian taxa, then species should tend to retain temporal niches over evolutionary time (i.e., temporal niche conservatism). We aim to investigate how body mass influences the activity patterns of African Euungulates across multiple sites within Africa and in non-native sites within Texas game ranches. To accomplish our study, we will utilize open-source trail camera data from online data repositories and deploy trail cameras at game ranches to analyze activity patterns across these datasets. We will use R statistical programming utilizing Activity and Overlap packages, Oriana a circular statistical software, and a null model approach (i.e., ROSARIO algorithm). We predict large mammals will show longer foraging activities during a diel cycle, and consistent activity patterns across sites (i.e., intraspecific niche conservatism, Intra-NC), while small mammals will show high activity directionality during a diel cycle, and activity pattern variation across sites (i.e., absence of Intra-NC). Our findings can inform if body mass influences activity patterns at continental scales.

Poster 27

THE ROLE OF BODY SIZE FOR ACTIVITY BUDGETS OF ARTIODACTYLS NATIVE TO NORTH AMERICA Brian T. McElligott and Ivan Castro-Arellano - Department of Biology, Texas State University (hnv20@txstate.edu)

Energy dynamics can shape ecological patterns and impact the evolutionary trajectory of a species. The metabolic theory of ecology links body mass to multiple ecological traits. This study seeks to extend these insights to activity patterns at a macroecological scale, using the large repository of camera trap dataset to explore the relationship between body mass and diel patterns of activity of North American artiodactyls. Artiodactyla, a diverse mammalian order, reflects episodes of rapid evolution driven by climate volatility, resulting in a wide range of body sizes and morphologies. Investigating phylogenetic niche conservatism and intraspecific temporal niche conservatism will help us understand the evolutionary drivers of activity patterns. We predict that as the strength of niche conservatism increases, the directionality of activity will decrease in artiodactyls. Concurrently, as we compare a gradient of body masses of artiodactyl species, we expect the directionality of activity will decrease. Larger species will tend to be time generalist, while smaller species will tend to be time specialists. This would then help support the hypothesis of a positive relationship between body mass and temporal niche conservatism. Utilizing the statistical program R will allow us to analyze these relationships with the Activity and Overlap packages. Contemporaneously, we will employ Oriana, a circular statistical software, and the ROSARIO algorithm, a null model approach, to analyze overlap. This study contributes to a previously unexplored aspect of macroecology relationships at a continental-scale approach by addressing the relationship between body mass and activity patterns in North American artiodactyls within the context of temporal niche conservatism.

Poster 28

SARS-COV-2 IN WILDLIFE: UNFORESEEN IMPLICATIONS AND COMPLEXITIES? Jennifer L. Berry and Ivan Castro-Arellano - Department of Biology, Texas State University (jlb502@txstate.edu)

Pathogen pollution of SARS-Cov-2 from humans to wildlife species has shown to be a very real possibility in domestic, laboratory, and free-range (i.e., wild populations) settings. These spillover events could become a concern to public health by creating potential endemic transmission cycles beyond human intrapopulation transmission. Also, the emergence of new, and more virulent, strains due to these interspecies transmission events is a potential risk that needs to be evaluated. An initial step to assess the magnitude of this threat is to generate and maintain taxonomic lists of which animals have acquired this virus, as well as their physiological response, including any documentation of spillback to humans. Our research narrows the topic down to mammalian species, with the goal to create a comprehensive list of every mammal species that has tested positive for SARS-Cov-2 to date, as such a list is either not available or severely outdated. Currently, our preliminary list shows 45 different mammal species that have tested positive so far. Our search showed that with available data most animals did show symptoms, but disease had lower severity than in humans and with a lower fatality rate. The animals tested positive in a variety of environments. In many cases it must be ascertained whether spillback to humans is possible, which remains a relevant research need. The type of monitoring and testing done often makes it difficult to tell whether intraspecific transmission occurred.

Poster 29

ASCERTAINING DIFFERENTIAL USE OF CAVE HABITATS BY MAMMAL SPECIES BASED ON SOFT TICK ABUNDANCE Brianna M. Mena and Ivan Castro-Arellano - Department of Biology, Texas State University (bmm153@txstate.edu)

Ticks are relevant vectors that play a crucial role in zoonotic pathogenic cycles. With a rise in tick-borne diseases (TBDs) in North America, it is imperative to identify reservoir hosts where certain TBDs are endemic. While the soft tick *Ornithodoros turicata* is recognized as one of the primary vector species for *Borrelia turicata*e, the agent of Tick-borne Relapsing Fever (TBRF) in the United States, potential vertebrate reservoirs that are relevant for the sylvan cycle of this pathogen remains largely unknown. In this ongoing study, the aim is to quantify the exposure of different mammal species to *O. turicata* in cave habitats within San Marcos and San Antonio, Texas, USA, and narrow down the list of species that maintain and potentially disperse the pathogen at local scales. As part of the expected results, small to medium-sized mammals (i.e. raccoons, opossums, and porcupines) will likely be the species most frequently visiting caves, as suggested in other studies. A second part of the study aims to relate cave vertebrate use with soft tick abundance. We expect that low-tick abundance sites will show increased mammal use against high tick abundance sites, showing potential evidence of vector or pathogen avoidance by determining ecological patterns and interactions between vectors and reservoir hosts at fine spatial scales, the intensity of pathogen spread among wild mammals can be identified, also revealing the risk of potential spillover to humans. Understanding the distribution of reservoir hosts for a pathogen within a wildlife community is crucial to understand the potential risks of human zoonotic infections.

Texas Society of Mammalogists
42nd Annual Members Business Meeting
17 February 2024

AGENDA

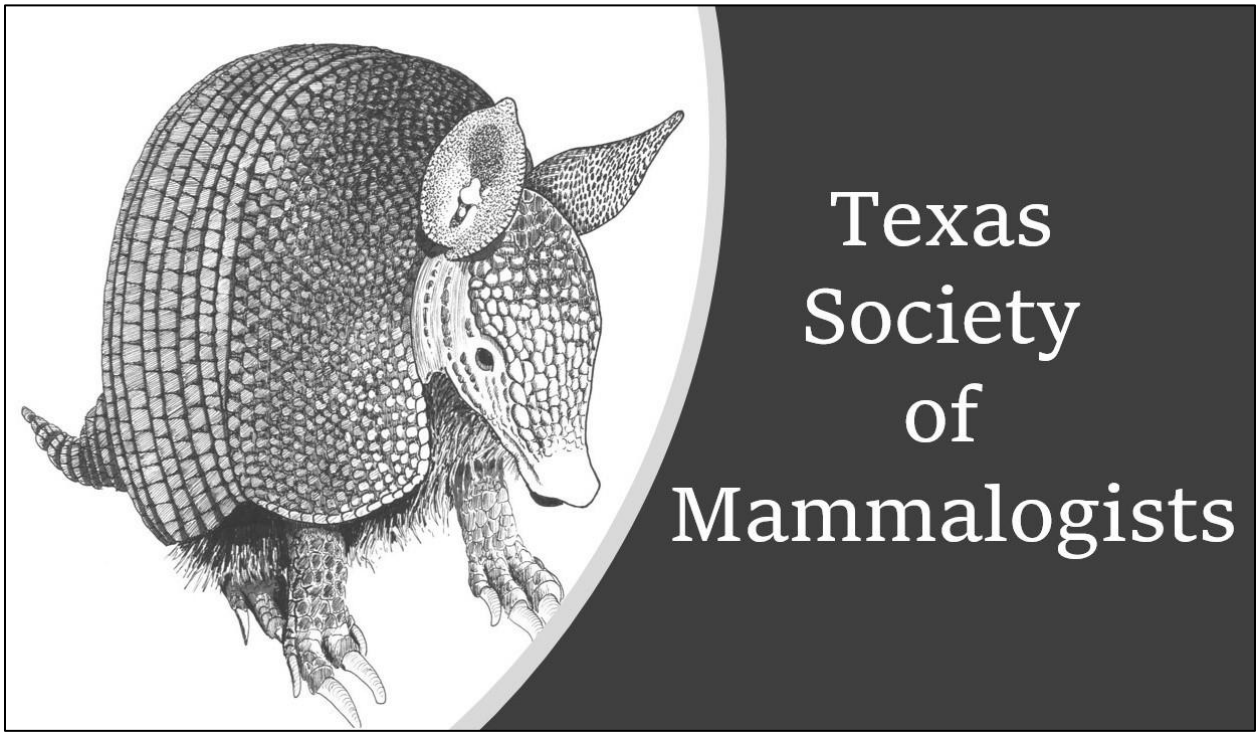
1. Call to Order
2. Approval of the minutes of the 2023 Member's Business Meeting
3. Officer Reports
    a. Secretary-Treasurer, Tom Lee
    b. Permanent Secretary, Joel Brant
    c. Editor, Michelle Haynie
4. Committee Reports
    a. Report of Honorary Membership Committee, Phil Sudman
    b. Report of Financial Advisory Committee, Phil Sudman
    c. Report of the Student Honoraria Committee, Dara Orbach
    d. Report of the Committee on Conservation, Michael Tewes
    e. Report of the *ad hoc* Informatics Committee, Michelle Haynie
    f. Report of the *ad hoc* Conduct Committee, Jessica Light
    g. Report of the *ad hoc* Auction Committee, Krysta Demere
5. Officer Elections
    a. President-Elect
    b. Secretary-Treasurer
    c. Editor
6. Old Business
7. New Business
    a. Selection of site for 2025 Annual Meeting
8. Closing Remarks of TSM President, Jessica Healy La-Price
9. Adjourn

Texas Society of Mammalogists
Treasurer's Report for 2023 Calendar Year
Submitted by Thomas E. Lee, Jr., Secretary-Treasurer

Income and expenses of TSM for the 2023 calendar year are shown below. Our checking account is with Bank and Trust of San Angelo. Our investments are handled by Morgan Stanley. The 2023 Total Income added to the starting Checking Account Balance, minus the 2023 Total Expenses yields a remainder of $2,647.36 in the TSM checking account (($24,106.82 + $2,736.00) - $24,195.46 = $2,647.36). For most of the year (1 April – 12 December) the checking account balance was $2,647.36. TSM total assets at the end of 2023 were $118,473.28. The value of the investment fund increased $12,485.07.

Checking Account Balance as of 1 January 2023	$2,736.00
Investment Account (Morgan Stanley) balance 1 January 2023	$102,628.05
Total TSM assets as of 1 January 2023	**$105,364.05**
2023 Income	
2023 Annual Meeting income (registration, meals and lodging fees)	
Student Registration	$180.00
Late Registration	$0.00
Non-Student Registration	$1,200.00
Late fees	$0.00
Meals	$2,242.00
Lodging & linens	$925.00
2023 Membership dues	$850.00
2023 Patron Memberships	$279.00
Cash Repaid to Checking Account	$752.67
T-shirts (75 ordered)	$690.00
Auction Income	$4,988.15
Transfer from Morgan Stanley account	$12,000.00
Total income	**$24,106.82**
2023 Expenses	
2023 Annual Meeting Expenses to TTU Center	$9,826.00
Event Insurance	$203.00
Entertainment	$900.00
Bartender – stipend, hotel, travel	$615.65
Refreshments, Beverages, Kegs	$1,070.39
Security	$280.00
Cash Taken out of Checking Account	$320.00
Office Supplies	$26.62
Printing Name Tags	$36.80
Printing Programs	$663.60
Student Awards	$3,700.00
T-shirts	$1,023.50
Stripes Fees	$29.90
Money Returned to Morgan Stanley Investment Account	$5,500.00
Total Expenses	**$24,195.46**
Checking Account Balance 31 December 2023	$3,360.16
Investment Account (Morgan Stanley) Balance 31 December 2023	$115,113.12
Total TSM Assets as of 31 December 2023	**$118,473.28**

Texas Society of Mammalogists



Newsletter
2024
The 42nd Annual Meeting

2024 Guest Speaker

Our banquet speaker will be Jim Williams. Jim is the partnerships manager and wildlife biologist for the Heart of the Rockies Initiative. The Initiative supports and partners with 29 land trusts in the northern Rockies and Canada. Jim is an Explorers Club Fellow, and an award-winning, professionally certified wildlife biologist who worked for Montana Fish, Wildlife & Parks for 30 years. He received an undergraduate degree in biology with an emphasis on marine biology from San Diego State and Florida State universities and his graduate degree in wildlife biology from Montana State University in Bozeman. Jim studied mountain lion ecology for his Master's Degree on Montana's Rocky Mountain Front and has focused on mountain lion and other wildlife conservation issues in various roles ever since. As a wildlife biologist in central Montana, Jim managed big game populations ranging from pronghorn antelope and elk to mountain goats, worked with private agricultural landowners on wildlife tolerance issues, and developed new conservation easements, wildlife management areas, and other habitat conservation projects. Later as the Montana FWP Wildlife Program Manager, Jim led a talented group of research and wildlife management biologists and his team developed grizzly bear monitoring and research programs, initiated western Montana's first wolf conservation program, and provided program support and leadership on multiple wildlife habitat conservation projects. Most recently as the Regional Montana FWP Director for northwestern Montana, Jim provided leadership and support for parks and recreation, wildlife, fisheries, game wardens, and all administration teams. Jim has worked with wildlife biologists in both Chile and Argentina on a variety of wildlife conservation projects. In 2018, Patagonia Inc. published his autobiography, *Path of the Puma*, which shares some of those adventures and the story of mountain lion conservation in the Americas. Penguin Random House Audio recently published the audio version of *Path of the Puma* which Jim personally narrated. Jim now spends his time protecting critical wildlife habitats and keeping them ecologically connected by supporting local and regional land trusts in the northern Rockies. Jim and his wife Melora live in the charming ski town of Whitefish, Montana, just west of Glacier National Park.

Patron Membership

Members are encouraged to consider becoming Patrons of the Society by donating $100 (or more) to support the Society's student paper awards. A list of Patron members is published on the website and in the program. Regular Patron membership is achieved with a donation of $100. Members who exceed $100 in donations to the Society's student awards fund will receive a certificate recognizing their total donation level as follows: $125, Ocelot Level; $250, Bobcat Level; $500, Puma Level; $1000, Jaguar Level. Members can upgrade at any time, and all donations are cumulative. There is no time limit or minimum contribution requirement as a member works toward the next level. Donation levels are confidential.

News & Announcements

Students Wanted!

We would like to encourage students to become more actively involved in the society. One of the ways you can do this is to join a committee. Below are the committees that are open for participation. If you are interested in joining a committee, please let us know while you are at the meeting. You also can email TXmammals@gmail.com with the name of the committee(s) you would like to join. We will pass your name along to the committee chair and they will be in touch with you. In addition to committee work, we are looking for volunteers to assist at the meeting every year (e.g., help with registration, etc.). If you are willing to assist at the meeting, please email TXmammals@gmail.com and indicate when you would be available to help and what you would like to do.

Conservation Committee

The role of this Committee is to monitor governmental and other activities that relate to conservation of mammals in Texas; advise officers and membership of the Texas Society of Mammalogists on issues of concern; and respond to the issues via formal resolutions. This Committee is intended to serve as a clearinghouse for information on all aspects of conservation of Texas mammals and to maintain the capacity to respond promptly and effectively in crises.

Ad hoc Auction Committee

The role of this Committee is to request and collect donations, set up and help conduct the live and silent auctions at the meeting, and help collect payments at the end of the auctions. Even though we are virtual this year, you can still join the committee and help with preparations for our next in-person meeting.

Ad hoc Government Liaison Committee

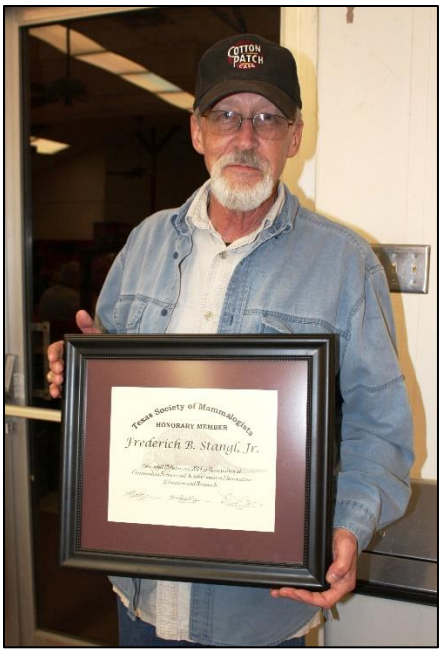
The role of this Committee is to facilitate interactions between the Texas Parks and Wildlife Department and TSM regarding issues that might affect mammalian conservation and research in Texas. It is similar to the Conservation Committee but is aimed specifically at communicating with TPWD.

Ad hoc Informatics Committee

The role of this Committee is to update and maintain the web and social media presence of the society. TSM currently has Facebook and X (Twitter) accounts.

Website Updates
We continue to work on updating the society website and are seeking requests for information you would like to see included on the site. Please send your suggestions and requests to Michelle Haynie (mhaynie@uco.edu; Editor).

In Memoriam – Fred Stangl



Fredrick B. Stangl, Jr., Ph.D. (1950-2024): Dr. Fred B. Stangl, Jr., passed away on 2 January 2024. Fred was a genuinely kind and gentle soul, and a dear friend to many of us in TSM. He will be greatly missed.

Fred was Emeritus of Midwestern State University and a long-time member of TSM – he presented a paper as a student at the first annual meeting in 1983 – and he was named an Honorary Member in 2013. Fred was a "fixture" at TSM for many years and was very supportive of our Society and Texas mammalogy. His knowledge of mammalogy and Texas mammals in particular were unsurpassed.

After graduating from Burkburnett High School in 1968, Fred joined the US Air Force in 1969, where he served as a journalist and public affairs specialist until 1977. Upon completion of his military service, he attended Midwestern State University, where he obtained his Bachelor's and Master's degrees, the latter under the direction of Dr. Walter W. Dalquest. His thesis was entitled "Post-Pleistocene mammals of Fowlkes Cave and vicinity, Culberson Co., Texas." Fred then attended Texas Tech University, where he obtained his PhD in 1984 under the direction of Dr. Robert J. Baker, completing a dissertation entitled "Dynamics of a contact zone between two chromosomal races of *Peromyscus leucopus* (Rodentia: Cricetidae)."

Upon completion of his PhD, Fred accepted a faculty position at Midwestern State University, where he then spent his entire professional career as Professor of Biology (1984 to 2012). Fred took great pride in his role as Curator of (and a major contributor to) the ASM-accredited MSU Collection of Recent Mammals. He directed 29 Master's students to completion, directed 36 additional students in non-thesis or undergraduate research, and published at least 84 papers, primarily on taxonomy and natural history of fossil and Recent mammals.

Fred is survived by his son, Frederick M. Stangl, of Lubbock. Abiding by Fred's wishes, no funeral service will take place. In the coming months, a celebration of life event may be planned; if so, TSM members will be informed of the details.

His obituary can be found here: https://www.timesrecordnews.com/obituaries/wtr023203

Abilene Christian University

Department of Biology, 1600 Campus Court, Abilene, TX 79699

Tom Lee
Phone: 325-370-4442
Email: leet@acu.edu

Research Interests, Projects, and Grants:
In 2023, I used my Clark Stevens endowed professorship funds to travel to the International Mammalogical Congress & The American Society of Mammalogists meeting in Anchorage, Alaska. I presented a talk on Genetic variation in *Thomasomys fumeus* (Cricetidae, Sigmodontinae). Furthermore, I conducted research in the lab on sequencing DNA of members of the genus *Thomasomys* with additional samples that were collected in the summer of 2023 from Cerro de Arcos in Southern Ecuador.

Undergraduate Students and Their Research:

- My student Ian Massey and I are finishing yet another study on the mammals of the Andes of Ecuador in 2023. I worked with Claire Dunn to sequence species of *Thomasomys* from the 2023 trip and others.
- My students Avy Langston, Ray Ramos, Harrison Smith, and Emily Thornock conducted a camera trapping survey at Abilene State Park in 2023. This project is the fifth camera trapping year for the Abilene State Park. This study is part of the emammal (snapshot) Smithsonian nationwide camera-trapping program. These data will be presented at TSM.
- I finished up a project including the Mammals of Tapichalaca Reserve, Ecuador.

Additional Information:
I finished up a project including the Mammals of Tapichalaca Reserve, Ecuador. I worked with Jorge Salazar at Texas Tech on Ichthyomyini rodents (published in 2023 in PeerJ). I worked with Jenny Korstain, Richard Stevens, and David Ray also at Texas Tech on *Myotis* (soon to be published in the Journal of Mammalogy). Abilene Christian University Natural History Collection is now in GBIF so the data from the collection are online for all to use. I am currently working on funding to have the collection digitized.

Angelo State University

Department of Biology, San Angelo, TX 76909

Loren K. Ammerman
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Web page: www.angelo.edu/content/profiles/75-loren-k-ammerman

Research Interests, Projects, and Grants:

I am interested in bats and other mammals. I work with students to use molecular data to reconstruct evolutionary relationships of organisms, to investigate genetic diversity, and to understand diet. I also am interested in distribution, community structure, and the ecology of bats, especially in Texas. Most recently I have been monitoring seasonal roost use and colony size fluctuation of *Leptonycteris nivalis* in Big Bend National Park and will be starting a project tracking movements of this species using GPS tags in summer 2024.
See my ResearchGate profile https://www.researchgate.net/profile/Loren-Ammerman for recent publications.

Current Graduate Students and Their Research:

- **Will McCoy** – MS thesis student, Phylogenetic position of flat-headed bats *Sauromys* and *Platymops* within Molossidae (Graduate Research Fellow, Fall 2021 – present)
- **Kennedy Berry** – MS thesis student, Characterization of roosts of *Myotis volans* in the Davis Mountains (Graduate Assistant, Fall 2023 – present)
- **Flor Calderón** – MS thesis student, Foraging behavior of Mexican long-nosed bats (*Leptonycteris nivalis*) in the Chisos Mountains of Texas (Graduate Research Assistant, Summer 2023 – present)
- **Ashley Loehn** – MS thesis student, Developing a protocol for detection of *Leptonycteris nivalis* in Emory Cave using airborne eDNA (Graduate Research Fellow, Fall 2023 – present)

Current Undergraduate Students and Their Research:

- **Katelynn Graves** – DNA barcoding of moths using COI gene to improve reference databases in the southwestern US (ASU Undergraduate Research Scholar, Fall 2023 – present)
- **Halle Summers** – Using nanopore sequencing with MinION for DNA barcoding of insects (ASU Undergraduate Research Scholar, Fall 2022 – present)

Additional Information:

The Angelo State Natural History Collection has over 20,000 mammal specimens and over 34,000 tissue specimens. The collection is searchable via Arctos at https://www.angelo.edu/dept/asnhc/collections.php and on VertNet and GBIF. You can contact me if you have any questions about the collection.

Robert C. Dowler
Phone: 325-486-6639
Email: robert.dowler@angelo.edu

Research Interests, Projects, and Grants:
Despite my retirement in August of 2022, I hope to continue research on spatial ecology of the plains spotted skunk (*Spilogale putorius interrupta*) in Texas, as well as other projects. I continue to have interest in all skunk species in Texas, porcupine dermatophytosis, and the conservation biology and systematics of Galapagos rodents.

Graduate Students and Their Research:

- J. Clint Perkins, former M.S. student is now a Ph.D. student at Texas Tech University working on the spatial ecology of populations of plains spotted skunks at the Katy Prairie. I am co-advisor with Dr. Richard Stevens at TTU.
- Madeline Arszulowics completed her M.S. thesis: A study of the parasitic fauna of North American spotted skunks (genus *Spilogale*) across the eastern and central United States.
- Matthew H. Hamilton completed his M.S. thesis: Home range analysis of sympatric striped and plains spotted skunks in southeastern Texas.
- Rebecca Scott completed her M.S. thesis: A resurvey of the terrestrial mammals of the Davis Mountains Preserve, Texas.

Austin College

900 N. Grand Ave., Sherman, TX 75090

Jessica Healy-La Price
Phone: 903-813-2338
Email: jhealy@austincollege.edu

Research Interests, Projects, and Grants:
My primary area of study is the physiological ecology of ground squirrels that hibernate. Using both laboratory and field populations of thirteen-lined ground squirrels, I investigate interactions between hormones that control food intake and reproduction. A current project involves investigating the latitudinal differences in hibernation patterns in thirteen-lined ground squirrels. I also have an ongoing long-term project examining the effects of small mammal exclosures on a prairie restoration site.

Undergraduate Students and Their Research:

- Danya Van Vuuren – Cancer-associated proteins in hibernating thirteen-lined ground squirrels
- Phoebe Nguyen – Effects of exogenous estradiol on ERα receptors in hypothalamus of thirteen-lined ground squirrels
- Elle McGill – Soil microbiome & plant composition in small mammal exclosures at Sneed Prairie

Baylor University

Department of Biology, Waco, TX 76798

Kenneth T. Wilkins (Retired)
Phone: (254) 709-7211
Email: ken_wilkins@baylor.edu

After 39 years on the faculty at Baylor University, including 24 years in administration, I have retired. Of interest to Texas mammalogists is that the Department of Biology mammal collection has been transferred to a location on the Baylor campus that should ensure its care in perpetuity and its availability to researchers. The collection is now housed in Mayborn Museum, a larger museum complex that incorporates the former Strecker Museum.

A teaching collection remains with the Department of Biology, but the research caliber materials transferred to Mayborn Museum. The research collection comprises c. 2,000 specimens (predominantly skin & skull preparations of rodents and bats) mainly from Texas. The specimens represent vouchers from an array of projects: surveys on Texas Parks & Wildlife properties (Fort Parker State Park, Lake Fairfield State Park, Hill Country State Natural Area), population and community studies on Texas Nature Conservancy properties (Clymer Meadow, Leonhardt Prairie), and numerous master's theses and doctoral dissertations conducted at these and other locations. There are a few specimens from Mexico, collected in association with teaching and research at Chapala Ecology Station in Jalisco from 1992 through 2001. Inquiries related to the collection should be directed to Ms. Anita Benedict, Collections Manager at Mayborn Museum.

Cameron University

Lawton, OK 73505

Dana N. Lee
Phone: 580-591-8009
Email: dalee@cameron.edu

Research Interests, Projects, and Grants:
I primarily study bats and am interested in all aspects of their ecology, genetics, and evolutionary relationships; although, I use molecular biology tools to study the genetic variation of other wildlife populations. Undergraduate students in my lab are currently working to determine the levels of genetic diversity of elk present in the Wichita Mountains Wildlife Refuge. Other projects include diet

analyses of the ghost-faced bat and the pallid pat. Finally, I am collaborating with Dr. Matt Van Sant at Cameron to examine potential interspecific differences of cutaneous water loss in bats found in Big Bend National Park.

Centenary College of Louisiana

2911 Centenary Blvd., Shreveport, LA 71104

Scott Chirhart
Phone: 318-869-5209
Email: schirhar@centenary.edu

Research Interests, Projects, and Grants:
Evolutionary Biology, including: Evolutionary/Population Genetics, Vertebrate Speciation and Systematics, Molecular Variation

Houston Museum of Natural Science

Dept. of Vertebrate Zoology, 5555 Herman Park Dr., Houston, TX 77030-1799

Dan Brooks
Phone: 713-639-4776
Email: dbrooks@hmns.org
Web page URL: www.hmns.org/exhibits/curators

Research Interests, Projects, and Grants:
Although I do quite a bit of work with birds, research interests in mammalogy span a variety of topics including community and behavioral ecology, biogeography and taxonomy, harvest patterns, natural history, and conservation. I am particularly interested in Neotropical species in lowland regions east of the South American Andes (especially the Peruvian Amazon, Paraguayan Chaco, and eastern Bolivia). Additional regions of coverage include Texas, Middle America, SubSaharan Africa, and more recently Southeast Asia.

Current mammalogy projects I'm involved with include:

- The Houston Urban Wildlife Project (HUWP) features a section on urban mammal projects that we're involved in (www.hmns.org/huwp).

- Tim McSweeny and I are partnering with Buffalo Bayou Partnership inventorying mammals through film bytes of camera traps, with accounts on specific natural history information. We are amazed that coyotes, beavers, otters, etc. can be found < 1 mile west of downtown Houston! We hope to submit a draft of the manuscript before spring.

Additional Information:
The primary driver of the Houston Museum of Natural Science is Education, including outreach. We educate every 4th and 7th grader in the Houston Independent School District annually (approx. 700,000 students/yr), have nearly 2.5 million individuals come through the doors per annum, and are the 4th highest attended museum in the country; surpassed only by Smithsonian, AMNH, and the MOMA. We are the highest attended US museum west of the Mississippi. Every year I tour college-level classes through our collections and permanent wildlife exhibit halls. If you have any interest in coming for a visit just touch base directly!

McMurry University

Department of Biology, Abilene, TX 79697

Joel G. Brant
Phone: 325-793-3875
Email: brant.joel@mcm.edu

Research Interests, Projects, and Grants:
My research interests are primarily concerned with the natural history of mammals, particularly in Texas and the Chihuahuan Desert. My current research program focuses on the natural history & ecology of mammals in the Southern Rolling Plains, northern Edwards Plateau, and northeastern Chihuahuan Desert. My current projects include a survey of the mammals of the Southern Rolling Plains, specifically Taylor County & surrounding areas (with Tom Lee); assessing the ecological impacts of wind farms on bat diversity; and various mammal, herp, and bird projects associated with Firebase Libby, a property owned by McMurry University located in Callahan County, Texas.

Midwestern State University

College of Science and Mathematics, 3410 Taft Blvd, Wichita Falls, TX 76308

Ray E. Willis
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Email: ray.willis@msutexas.edu

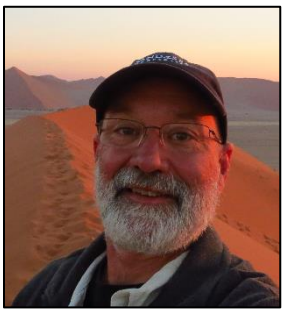
Research Interests, Projects, and Grants:
I am the Chair of Biology and Curator of the Dalquest Vertebrate Collection. My current research is conducted at the Dalquest Research Station located on the northeastern border of Big Bend Ranch State Park. I have initiated ongoing herpetological and mammal surveys of Dalquest with monthly trips throughout the year, along with extended summer opportunities.

I am currently working on new grant opportunities for future funding of the Dalquest Desert Research Station.

Students and Their Research:
I currently have four graduate students working on various vertebrate morphology and phylogenetic research projects. I have funding for all current projects and anticipate having room for at least two more students who would be interested in vertebrate research.

Tarleton State University

Department of Biological Sciences, Stephenville, TX 76402



Philip D. Sudman
Phone: 254-968-9154
Email:sudman@tarleton.edu
Web page URL: faculty.tarleton.edu/sudman/

Research Interests, Projects, and Grants:
I continue to have a keen interest in pocket gopher genetics/phylogenetics/population genetics as well as general mammal historical biogeography. Although I am still teaching and doing limited research, the bulk of my time these days revolves around the development of a 780 acre ranch along the Colorado River south of Goldthwaite in Mills County into the Timberlake Biological Field Station (https://www.tarleton.edu/timberlakeranch/index.html). If anyone is interested in bringing classes for a day, a weekend, or longer, please contact me. Facilities include a classroom building, bathhouse, a small cabin, a large pavilion, and two bunkhouses with capacity for up to 24 students. Unfortunately, mammal diversity in this part of central Texas is rather limited, but birding, herping, and aquatic opportunities are fantastic!

Graduate Students and Their Research:
Madison Gover – Effects of the presence of American Bison (*Bison bison*) and Black-tailed Prairie Dogs (*Cynomys ludovicianus*) on small mammal diversity at Caprock Canyons State Park

Russell S. Pfau

Phone: 254-968-9761
Email: pfau@tarleton.edu
Web page: faculty.tarleton.edu/pfau/

Research Interests, Projects, and Grants:
My main research focus is population and evolutionary genetics—often with a focus on conservation biology. Small mammals have been the primary subject of my research, but I have broadened my taxonomic coverage to include crustaceans, fish, plants, frogs, and insects. Ongoing projects include:

- Documentation and assessment of contact zones between *Geomys bursarius* and *G. breviceps* in southern Oklahoma and northern Texas
- Distribution of shrews (*Blarina*) in the southern Great Plains region using mtDNA sequencing (for identification) and morphometric analysis to examine geographical patterns of variation
- Population genetics and soil-type correlations of several pocket gopher species in the genus *Geomys*
- Species status of two bumblebees in Texas (in collaboration with Jessica Beckham and Jeff Johnson)
- Phylogenetics and species discovery among Texas anemones (windflowers)
- Conservation genetics of the crawfish frog

Undergraduate and Graduate Students and Their Research:

- Kynlee Marquez, Emilie Janicek, and Sarah Bowden: Application of AFLP and mtDNA sequencing to characterize contact zone dynamics between *Geomys bursarius* and *G. breviceps.*

Recent publications:

- Pfau, R. S., Kozora, A. N., Gatica-Colima, A. B., & Sudman, P. D. (2023). Population genetic structure of a Chihuahuan Desert endemic mammal, the desert pocket gopher, *Geomys arenarius*. Ecology and Evolution, 13(10), e10576.

Texas A&M Natural Resources Institute

1919 Oakwell Farms Parkway, Suite 100, San Antonio, Texas 78218

Stephanie Martinez-Brewer
Phone: N/A
Email: Stephanie.martinez@ag.tamu.edu
Web page: https://nri.tamu.edu/people/research/stephanie-brewer/

Research Interests, Projects, and Grants:
I am a senior research and policy associate for Texas A&M Natural Resources Institute. I support the conservation of nationwide declining, threatened and endangered species by working with the U.S. Fish and Wildlife Service (as well as state and other federal partners) to build Species Status Assessments (SSAs) and other Endangered Species Act (ESA) documents such as five-year reviews, and aiding in species range and habitat mapping. I primarily dedicate my work efforts to GIS-centered analysis for these projects. Since entering policy work in 2018, I have been a part of several assessment core teams, one being for the plains spotted skunk (*Spilogale interrupta*) in 2021-2022. In 2023, I was a core team member and conducted the GIS work for a "high-profile" species assessment, for which I built a range-wide habitat suitability model. This year, my GIS efforts are dedicated towards landscape assessments.

I also have previous experience with DoD Natural Resources programs for Texas military lands in environmental monitoring efforts that aid in the mitigation of negative urban-wildlife interactions, particularly those that pose as aircraft strike hazard risks on Air Force installations.

I received a Bachelor of Science in biology from Abilene Christian University in 2013, and a Master of Science in biology from Angelo State University in 2015. During my education, I worked almost exclusively with Mexican free-tailed bat urban populations.

My research interests include urban wildlife ecology, and how human development influences behavior and species adaptation. I completed a project for DoD in 2022 that focused on urban Rio Grande ground squirrels (*Ictidomys parvidens*) in west Texas; I am currently interested in landscape-level impacts for vulnerable and threatened species. Outside of work, I enjoy the outdoors by birdwatching, hiking, and half marathon training. I participated in my first in-person half marathon race in December 2023 post-recovery from a severe invasive MRSA infection in 2021-2022.

Texas A&M University-College Station

Department of Ecology and Conservation Biology, Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX 77843

Jessica Light
Phone: 979-458-4357
Email: jessica.light@ag.tamu.edu
Web page: www.jessicalight.org

Research Interests, Projects, and Grants:

I am an evolutionary biologist with a focus on phylogenetic, population genetic, and ecological interactions between parasites and their hosts. To address these broad research interests, I employ a variety of tools such as molecular (multiple genes, population genetic loci, or genomic data) and morphological data from field-collected and museum specimens. My lab is currently funded by the National Science Foundation on three separate projects: 1) Mid-career OPUS to study *Peromyscus* systematics; 2) Collaborative research exploring sucking louse phylogenetics and genomic and morphological selection; and 3) Thematic Collections Network to digitize mammal trait data from western North America.

Graduate Students and Their Research:

- Ayomiposi Abraham is a 2nd -year Ph.D. student interested in pocket gopher and louse associations and molecular evolution.
- Oluwaseun David Ajileye is a 2nd -year Ph.D. student interested in host-parasite coevolution, vector-borne disease, and genetic diversity in small mammals and their parasites.
- Brady Craft is a 2nd -year M.S. student interested in the evolution of morphological, physiological, and behavioral adaptation mechanisms in different mammalian species. Brandy is working on morphological evolution in *Peromyscus* for her thesis.
- Haley Ellis is a 2nd -year M.S. student interested in wildlife conservation, especially endangered species, and wildlife rehabilitation. Haley is working on morphological evolution in *Peromyscus* for her thesis.
- Ali Lira is a 3rd -year Ph.D. student interested in Neotropical bat flies, bats, and host-parasite coevolution. For her dissertation research, Ali will explore species delimitation in bat flies using morphological and molecular data.
- Grace Martindale is a 1st -year M.S. student interested in *Peromyscus* morphological evolution.

Undergraduate Students and Their Research:

- Abby Jensen is a 4th -year undergraduate student interested in conservation biology. She is currently working on a project examining chewing lice that parasitize *Geomys* pocket gophers with technician Danielle and graduate students Ayomiposi and Oluwaseun.

- Emilia Myslak is a 2nd -year undergraduate student working on trait data digitization with technician Emily.
- Reese Williford is a 4th -year undergraduate student working with Brandy, Haley, and Grace on *Peromyscus* morphology.
- Thomas Yllander is a 4th -year undergraduate student working with Brandy, Haley, and Grace on *Peromyscus* morphology.

Technicians and Their Research:

- Emily Coyote is our lead technician working on the RANGES project. Emily spends a lot of time in the collections recording specimen data and obtaining accurate georeference information.
- Danielle Dillard is investigating interactions between the giant kangaroo rat and a trombiculid mite. She also is interested in porcupine range expansions, lice parasitizing pocket gophers, and several other projects ongoing in the Light lab.
- Amanda Moehring is a curatorial assistant to the Biodiversity Research and Teaching Collections.

Additional Information:
The mammal division in the Biodiversity Research and Teaching Collections (http://brtc.tamu.edu) currently has over 67,000 specimens. Our data are available online through VertNet, iDigBio, and GBIF.

Texas A&M University-Corpus Christi

Department Life Sciences, Texas A&M University- Corpus Christi, Corpus Christi, TX 78412

Dara Orbach
Phone: 361-825-3217
Email: dara.orbach@tamucc.edu
Web page: https://daraorbach.weebly.com/

Research Interests and Projects:
My research interests are the functional anatomy and behavioral ecology of marine mammals. My functional anatomy research focuses on reproductive morphology and explores potential evolutionary drivers of diverse genital forms and coevolution between the sexes. My behavioral ecology research assesses mating patterns, decision-making processes, and population biology. Current graduate and undergraduate lab members are doing: 1) sperm biology analyses to help conserve dolphins through advancements in assisted reproductive technology, or 2) land or boat-based research to explore the health, behavior, population biology, and habitat use of bottlenose dolphins exposed to extensive anthropogenic disturbances in the Texas Coastal Bend.

Graduate Students and Their Research:

- Jackie Rich, Ph.D. candidate. Bioinspired artificial vagina development to improve ejaculate quality
- Makayla Guinn, Ph.D. student. Hormones and contaminant loads of bottlenose dolphins
- Emily McGhee, M.S. student. Acoustic properties of bottlenose dolphins in varied foraging contexts

Undergraduate Students and Their Research:

- Anya Ocampos, Honors student/LSAMP fellow. Pharmaceuticals in bottlenose dolphin blubber
- Leala Punjabi, Honors student/LSAMP fellow. Bottlenose dolphin behavioral states near treatment plants
- Maddy Licker, Honors student. Training Argentine black and white tegus in husbandry
- Cindy Vaquero, McNair fellow. Swimming energetics of dusky dolphins
- Michelle Hazard, Honors student. Bottlenose dolphin population biology and habitat use
- Matthew Flores, Honors student. Bottlenose dolphin population biology and habitat use
- Madison Hallmark, Honors student. Bottlenose dolphin population biology and habitat use

Additional Information:

- I have supervised over 135 undergraduate students from groups historically underrepresented in STEM disciplines and serve as a faculty mentor to four professional organizations.
- I do extensive public outreach that highlights the historic gender bias in the field of genital evolution.
- I facilitate multiple collaborations between university and K-12 students.

Texas A&M University-Kingsville

Feline Research Program, Caesar Kleberg Wildlife Research Institute

Michael Tewes
Phone: 361-593-3972
Email: michael.tewes@tamuk.edu
Web page: https://www.ckwri.tamuk.edu/research-programs/feline-research-program

Research Interests, Projects, and Grants:
Small cats – ocelot, bobcat, jaguarundi, margay, clouded leopard, Asiatic golden cat, leopard cat, marbled cat; not-so-small: cougar and jaguar

Graduate Students and Their Research:

- Amanda Veals: Ph.D. student; examining resource selection and landscape connectivity of the ocelot in South Texas with the aim to help the Texas Department of Transportation

plan for wildlife crossing structures to mitigate vehicle collisions for this endangered species

- Jason Lombardi: Ph.D. student; Factors of Ocelot Occupancy in South Texas (Collaborative Effort with East Foundation); Ocelot-Road Monitoring Project on FM 1847 in Cameron County, TX (Collaborative Effort with TXDOT)

Texas Parks and Wildlife Department

District 1 Diversity Biologist, Alpine, TX 79830

Krysta D. Demere
Phone: 432-244-9945
Email: Krysta.demere@tpwd.texas.gov

Research Interests, Projects, and Grants:
As a Diversity Biologist for Texas Parks and Wildlife, I supervise non-game research projects, provide technical guidance to private landowners regarding management and effective conservation actions for rare and threatened species, conduct outreach programs for landowners and the public, and conduct surveys for nongame species across the ~25 million acres that encompass the 16 counties of the Trans-Pecos Wildlife District. My efforts within the discipline of mammalogy for the past year have primarily focused on compiling a comprehensive database for historical and recent black bear observations, establishing a genetic tissue collection for black bear samples retrieved within west Texas, monitoring overwintering western bat species for the presence of Pd and potential development of white-nose syndrome, and investigating disease outbreaks in local lagomorphs. I have had the honor of serving as the official artist for TSM since 2018 and look forward to representing the society each year.

Texas State University

Department of Biology, San Marcos, TX 78666

Ivan Castro-Arellano
Phone: 512-245-5546
FAX: 512-245-8713
Email: ic13@txstate.edu
Webpages:
https://www.bio.txst.edu/faculty-staff/ivan-castro-arellano.html
http://www.researchgate.net/profile/Ivan_Castro-Arellano

Research Interests, Projects, and Grants:

I use my background and training as an ecologist to address questions to understand the ecology of zoonotic diseases and invasive species. Because mammals are natural reservoirs for many zoonotic diseases, most of my work has been devoted to this taxonomic group, especially rodents and bats. Beyond my interest in disease ecology, I also have done research on theoretical aspects of community ecology, specifically on the analysis of assemblage-wide temporal niche overlap and elements of metacommunity structure. I address these questions using a variety of approaches that include modelling, null models, and analyses of both published and empirically data generated at my lab. Although my research interests are wide, they are intertwined and my goal is to integrate the study of community level dynamics in mammalian hosts to understand the dynamics of pathogen transmission.

Current Projects:

Although I have worked on multiple research topics and new ones develop based on new collaborations, I currently have three main lines of research at my lab:

1) Ecology and evolution of activity patterns. Using publicly available large databases and fieldwork my lab is addressing multiple questions related to the ecological determinants of activity patterns and how this information can be used to understand the structure of mammalian assemblages worldwide. Another topic within this line is how anthropogenic changes can affect mammalian activity patterns and the implications for the ecology of these species.
2) Host-vector ecology of *Ornithodoros turicata* in Central Texas. The ecology of soft ticks is a little known despite these tick species being vectors of zoonotic pathogens. At my lab, we are trying to ascertain which wild mammals serve the role of reservoirs for the pathogens vectored by these ticks and what role these have to disperse ticks among sites.
3) Ecology of TX Kangaroo rat. With funding from TPWD and USFWS and in collaboration with Dr. Joe Veech (Texas State University), we have worked on different questions related to the ecology and conservation of this rodent species endemic to TX. This species is currently being considered for ESA listing and the generation of new knowledge is focused on the management for the conservation of this species.

Graduate Students and Their Research:

Current and recent graduate students

- Stoneham, Margaret (M.Sc. 2022). Temporal overlap among common mesocarnivores throughout the neotropics.
- Bergmanson, Stephanie (M.Sc. 2022). Comparison of Tapir species activity patterns across multiple sites in the neotropics.
- Reagan, Cassidy (M.Sc.). Elements of Metacommunity Structure for Bat Assemblages Across Elevational Gradients Worldwide.
- Ramirez, Rosa (M.Sc.). Integrating Host Community Ecology into the Disease Ecology of a Tick-Borne Relapsing Fever Vector.

I AM CURRENTLY SEEKING WELL QUALIFIED MS AND PhD STUDENTS THAT ARE INTERESTED IN THE TOPICS WE DO RESEARCH AT MY LAB. PLEASE CONTACT ME AT MY EMAIL IF INTERESTED.

Select past students

- Matt Milholland (PhD. 2017). Matt's dissertation work was centered around the ecological correlates for hantavirus seroprevalence at different spatial scales.
- Sara Weaver (PhD. 2019). Sara worked on the effects wind energy production has on populations of bats at wind farm in south Texas.
- Madison Torres (M.Sc.). Madison's thesis was on the home range dynamics of the invasive Small Asian Mongoose (*Herpestes aeropunctatus*) in Puerto Rico.
- Kathryn Michelle Benavidez (M.Sc. 2016). Michelle's research was also in Puerto Rico and centered on the potential role of mongooses and commensal rodents as reservoirs of *Leptospira*, a zoonotic pathogen that has human health concern.
- Bradford Westrich (M.Sc.). Brad's work was related to a NIH-funded grant centered about the population genetic dynamics and vector ecology of *Ixodes scapularis*. His thesis centered on the role of small and meso-mammals as hosts for this tick in eastern Texas.

Leila Siciliano-Martina

Email: sicilia77@txstate.edu
Webpage: https://leilamartina.weebly.com/

Research Interests, Projects, and Grants:
My lab is focused on the relationship between animal traits and environmental conditions, particularly the ways in which human-modified systems (e.g., captivity, urbanization, changing climates) can influence organismal performance and phenotype. We explore functional traits (related to dietary, locomotor, physiological, and behavioral function) at the population and community-level to understand baseline trait-environment relationships as well as the ways in which traits can be modified by disturbances, and what this can tell us about species ecology, evolution, and conservation. We assess these topics using a combination of morphological size and shape analyses (e.g., traditional and geometric morphometric techniques), spatial analyses, and ecological modeling.

Graduate Students and their research:

- **Sam Lamb** – MS thesis student – Fall 2023 to present – Morphological and dietary variation of gray foxes (*Urocyon cinereoargenteus*) across urbanization gradients
- **Alyssa Arguijo** – MS thesis student – Spring 2024 to present – Research topic to be determined

Undergraduate students and their research:

- **Duncan Vick** and **Isaac Brown** – Spring 2023 to present – Carnassial relative blade length as an indicator of carnivoran dietary ecology
- **Triniti Clarke** and **Marina Salel** – Spring 2023 to present – Trait turn-over and changing community assemblages in Kenya fossil sites through time

Texas Tech University

Department of Biological Sciences, and Natural Science Research Laboratory, Museum of Texas Tech University, Lubbock, TX 79409

Robert D. Bradley
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Research Interests, Projects, and Grants:

My research interests include: systematic relationships, molecular evolution, genomics, and natural history of mammals, particularly in the cricetid and geomyoid rodents; determining the genetic basis for adaptation in *Peromyscus*; examination of hybrid zones between genetically distinct taxa; understanding isolating mechanisms and the dynamics of genetic introgression; exploring the utility and application of the Genetic Species Concept; examination of the origin and evolution of rodent-borne viruses, especially in the use of rodent phylogenies and genetic structure to predict the transmission and evolution of viruses; various wildlife diseases such as chronic waste disease in deer, pneumonia in bighorn sheep, modeling predictions associated with epidemiology and the impacts of climate change; diets, genetics, and conservation of Texas Black Bears and Mt. Lions, and growth and utilization of natural history collections, especially those pertaining to mammals.

Current Projects:

- Systematics of the genus *Peromyscus*
- Use of genomic methods to investigate speciation and adaptation in *Peromyscus*
- Effects of the zonadhesin gene in speciation of mammals
- Hybridization between white-tailed and mule deer
- Detection methods of Chronic Wasting Disease in cervids
- Genetics of transplanted populations of bighorn sheep in Texas
- Phylogenetic relationships of Neotomine and Reithrodontomyine rodents
- Systematic and genome studies of the genus *Cratogeomys*, *Geomys*, and *Thomomys*
- Ecology of hanta- and arenaviruses in the southwestern US and Mexico
- Morphology, landscape genomics and effective population size of the Palo Duro Mouse, *Peromyscus truei comanche*
- NSF funded project “A Partnership to Facilitate Scientific Inquiry into the Vast Functional Trait Diversity of Phyllostomid Bats” (Richard Stevens – project PI)
- NSF funded project “Advancing Digitization of Biodiversity collections: Collaborative Research: Ranges: Building Capacity to Extend Mammal Specimens from Western North America” (Richard Stevens – project PI)
- Use of next-gen methods for detecting zoonoses
- Detection of novel viruses using metagenomics in *Sylvilagus*
- Detection of pneumonia in bighorn and aoudad in Texas

- Taxonomic catalogs of terrestrial vertebrates described exclusively from Texas (David J. Schmidly and Lisa Bradley - PIs)
- Population genetics and density of coyotes based on examination of DNA isolated from scats (Danielle Deming MS project)
- Illustrated key to the Mammals of Texas (David J. Schmidly, Richard Stevens, Lisa Bradley, Robert Dowler, and Katelyn Albrecht Co-PIs)
- Detection of prion disease genes across Mammalia

Graduate Students and Their Research:

- Joanna Bateman (PhD candidate) is in her 6th year and is using genomic methods to determine speciation and evolutionary processes in heteromyid rodents.
- Macy Krishnamoorthy (PhD candidate) is in her 7th year and is co-chaired by Dr. Richard Stevens. Macy is examining bat feeding and pollination impacts on baobab trees, and other bat questions.
- Katelyn Albrecht (MS student) is in her 2nd year and is co-advised by Dr. Richard Stevens. Katelyn is using 3D scans of bats to learn more about wing variation in Phyllostomids.
- Sufia Akter Neha (PhD student) is in her 2nd year. Her research project will involve microbiome analyses of bear and mountain lions.
- Emily Schmalzried (MS student) is in her 1st year. Her thesis will involve next-gen methods for detecting zoonoses.

Graduated Students:

- Emily Wright, now Dr. Wright (May 2024), is undertaking a postdoctoral stint at the CDC in Atlanta as an ORISE Fellow.

Undergraduate Students and Their Research:

- Last year, 9 undergraduate students (Georgina Brugette, Julia Carmona, Beau French, Margaret Lee, Erin Lowenberg, Maddison Reddock, Emily Schmalzried, Savannah Ticknor, and Savannah Zen) worked in the research lab.

Postdoctoral Researchers:

- Dr. Emma Roberts (PhD 2020). Emma is a postdoctoral researcher at the Texas Tech University Climate Center. Emma is: researching the impacts of climate change on mammalian zoonoses, investigating the role of gametic recognition in speciation and hybridization, and examining mechanisms behind reproductive isolation and the role they play in mammalian speciation.

Researcher Technician:

- Georgina Brugette has joined the Lab as a technician and is spearheading the project involving the use of next-gen methods for detecting zoonoses. In addition, she is assisting on several other mammal projects.

Additional Information:

- My teaching responsibilities include: Mammalogy, Natural History of the Vertebrates, You're a Biology Major: So Now What?, Zombie Apocalypses, Rise of the Wuvarillas,

and other Current Events in Biology, Molecular Systematics and Evolution, Mammalogy for Advanced Students, and Principles of Systematics. In addition, I teach Mammalogy at the Texas Tech University Center at Junction each May (referred to as the Intersession Semester). This is an excellent opportunity to receive credit at the Graduate or Undergraduate level. I also teach "Field Methods" for the Museum of TTU each summer. This three-week course offers an opportunity to garner experience in field biology.

- I am the Director of the Natural Science Research Laboratory, Museum of Texas Tech University. I would be pleased to address questions about loans, visits, or resources.
- In addition, I am editor of the publication series (*Occasional Papers* and *Special Publications*) at the Natural Sciences Research Laboratory, Museum of Texas Tech University. We are seeking to increase the number of contributions to these two series, so please, send us your manuscripts!
- In the Summer of 2022, *Texas Natural History in the Twenty-first Century*, by David J. Schmidly, Robert D. Bradley, and Lisa C. Bradley was published by Texas Tech University Press. This book provides an updated synopsis of Texas natural history. In this version, an effort was made to include information for amphibians, reptiles, and birds as obtained by members of the Bureau of Biological Survey. In addition, the information for mammals was updated and expanded.
- In the Fall of 2019, the Memorial Volume for the Dr. Robert J. Baker was completed and provides a synthesis of the career of one of the most ardent supporters of TSM. It is available on the NSRL website and is cited as follows: Bradley, Robert D., Hugh H. Genoways, David J. Schmidly, and Lisa C. Bradley. 2019. Overture. Pp. v-ix in From field to laboratory: A memorial volume in honor of Robert J. Baker (R. D. Bradley, H. H. Genoways, D. J. Schmidly, and L. C. Bradley, eds.). Special Publications, Museum of Texas Tech University 71:xi+1-911.
- In 2019, Dr. Robert Dowler and I were invited to write a summary of North American Mammalogical Research for the Centennial Issue of the *Journal of Mammalogy*. This manuscript (see below) provides useful information for students and faculty who are interested in the history of mammalian research methods. Bradley, Robert D., and Robert C. Dowler. 2019. A century of mammal research: changes in research paradigms and emphases. Journal of Mammalogy, Centennial Issue 100:719-732.
- In 2017, David Schmidly led an effort to publish a timeline of important events in North American Mammalogy; this effort resulted in the manuscript (see below) that provides useful information for students (think qualifying exams), faculty, and historians. Schmidly, David J., Robert D. Bradley, Lisa C. Bradley, and Richard D. Stevens. 2017. A timeline of significant events in the development of North American mammalogy. Special Publications, Museum of Texas Tech University, 66:1-37.

Caleb D. Phillips

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Research Interests, Projects, and Grants:
The Phillips laboratory studies metagenomes, genomes, craniofacial development, as well as some morphology and molecular mammalogy. The lab is currently supported by Texas Parks and Wildlife Department, the NIH, and NSF.

Graduate Students and Their Research:

- Rebecca Gabrilska (PhD student): Chronic wound microbiomes and how they are influenced by human genetics
- Khalid Omeir (MS student): Microbiome-transcriptome-wide association of bacteria in chronic wounds
- Jacob Ancira (MS student): Structural equation modeling to predict wound healing time based on wound microbial composition
- Hendra Sihaloho (PhD student): Community assembly of microbiomes of forest interior bats of Malaysia
- Sufia Akter Neha (PhD student, co-advised with Robert Bradley): Microbiomes of black bears

Additional Information:
My teaching responsibilities include Bioinformatics, Metagenomics and Organic Evolution. These courses are offered at both graduate and undergraduate levels. I am also Curator of Genetic Resources at the Natural Science Research Laboratory.

Richard D. Stevens

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Research Interests, Projects, and Grants:

- Patterns of biodiversity of New World bats.
- Conservation of Atlantic Forest bat communities.
- Metacommunity structure of rodents of the Mojave Desert.
- Dispersal and metapopulation dynamics of Texas Kangaroo rats.
- Continued Study of the Plains Spotted Skunk (with Bob Dowler).
- Use of Highway Structures by Bats in the Trans-Pecos and East Texas.

Graduate Students and Their Research:

- Cristina Rios-Blanco—Cristina started her Ph.D. at TTU in August 2014. She is interested in how bat communities are assembled at regional scales. She is studying

Neotropical bat metacommunities along elevational gradients and trying to use elevational contexts to better understand bat metacommunity structure. She will also be developing a network approach to apply to metacommunities to better elucidate biological processes important to metacommunity dynamics.

- Garret Langlois is a Ph.D. student working on the roosting ecology and behavioral network structure of great fruit-eating bats (*Artibeus lituratus*) in Atlantic Forest of Paraguay.
- John Stuhler—John is a Ph.D. student that completed his M.S. at the University of Wisconsin. He is interested in the ecology/conservation biology of Texas kangaroo rats and is conducting an intensive study of habitat preferences. He is also interested in large-scale diversity patterns in heteromyid rodents.
- Carlos Garcia—Carlos is a M.S. student under David Ray and me. For his masters, he is working on studying the roosting ecology of the threatened bat species, *Myotis septentrionalis,* in Louisiana and is interested in studying the diets between *M. septentrionalis* and *M. austroriparius*. He has also conducted a survey throughout the state of Louisiana for white-nose syndrome.
- Jenna Grimshaw is a Ph.D. student co-advised by David Ray and me. She earned an M.S. at Tarleton State University studying patterns of phylogenetic diversity of Mexican bats. Her current research is to identify patterns of genetic structure in three species of critically-imperiled Louisiana bats: *Myotis austroriparius*, *M. septentrionalis*, and *Eptesicus fuscus*. More specifically, she aims to determine if each of these three species comprise a single population or multiple genetic subpopulations with little gene flow. She is also interested in the distribution of transposable elements among mammalian genomes from a genomic ecological perspective.
- Holly Wilson—Holly is a Ph.D. student who recently earned her M.S. from Fort Hays State University under Elmer Birney. She is interested in how bats use highway structures as day-roosts in the Trans Pecos of Texas as well as characterizing ecological neighborhoods of pallid bats.
- Clint Perkins—Clint is a Ph.D. student who recently earned his M.S. from Angelo State University under Bob Dowler. His project revolves around population and spatial ecology of the plains spotted skunk, *Spilogale putorius interrupta*.
- Macy Madden—Macy is a Ph.D. student co-advised by Robert Bradley and me. She is interested in plant-pollinator interactions between baobab trees and *Rousettus aegyptiacus* and *Epomophorus* species in South Africa and Kenya.
- Angela Alviz—Angela is a Ph.D. student who received her M.S. in Biology from the Pontificia Universidad Javeriana. Angela is interested in Tapir metapopulation dynamics in Colombia.
- Emma Sanchez was recruited into the lab to do her M.S. on use of culverts as day roosts by bats in east Texas. She graduated from TTU with her B.S. in 2019 and we are glad to have her back in the lab!
- Amanda Newman joined the lab this year after completing her B.S. at TTU. She is interested in how bats use highway right-of-ways as habitat.
- Jayme Czap also joined the lab this year after completing her B.S. at TTU. She is interested in how bats select bridges as day roosts in east Texas.

Texas Tech University/University of New Mexico

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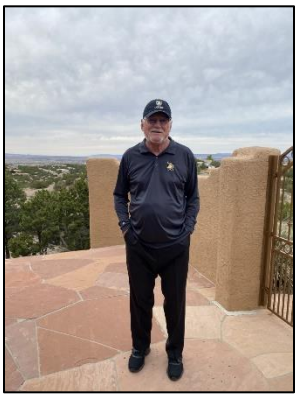

David J. Schmidly
Retired President and Professor Emeritus
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Research Interests: Natural History, Systematics, and Conservation of Texas Mammals

Projects: 2023 turned out to be an excellent year as I continued my work on Texas mammals. I joined with colleagues to publish 1 book with the Texas A&M Press and 2 Special Publications of the Museum of Texas Tech University.

Together, colleagues Frank Yancey, Steve Kasper, Rick Manning, and I published a "Field Guide to the Mammals of the Trans-Pecos," which appeared over the summer. The book includes accounts of the 105 species that occur in the Trans-Pecos and includes color photographs of mammals, detailed distribution maps, keys, and illustrations of mammals drawn by the late Chester O. Martin.

I, along with colleagues Robert and Lisa Bradley, and Frank Yancey, published Special Publication 77, a "Taxonomic Catalog for the Recent Terrestrial Vertebrates (Species and Subspecies) described from Texas." The three of us edited 3 taxonomic catalogs (one each for birds and mammals, and 1 for amphibians and reptiles combined), authored by experts in the field of Texas ornithology, herpetology, and mammalogy. Robert, Lisa, Frank, Joanna Bateman, and I produced the mammal catalog which included accounts of 143 mammals described from Texas. These catalogs contain the following information: original scientific name, presently used name, common name, synonymies, type specimen, type locality, topotype and near topotypes in collections, date of most recently collected topotype and near topotype specimen(s), tissue availability, and remarks. The volume was dedicated to the memory and career of Brian Chapman who passed away in 2021 and was a Charter Member of TSM.

Later in the year, I joined a team of 15 other scientists, led by Robert Bradley, in preparing Special Publication 78, "Genetic Identification of Pocket Gophers (Genera *Cratogeomys*, *Geomys*, and *Thomomys*) in Texas and surrounding areas." This publication uses molecular genetic and genomics data to determine the taxonomic, systematic status, and the distribution of pocket gophers from Texas and the surrounding regions. This is the most comprehensive and significant account of Texas gophers assembled to date.

Finally, I hired an expert to produce a website for me, which can be found at www.davidschmidlyphd.com, to highlight the books and publications I have produced over the years as well as other aspects of my career.

Also, in 2023 Robert and Lisa Bradley, Frank Yancey, and I completed work on "A comprehensive annotated checklist of Recent Land and marine mammals of Texas, 2024, with comments on their taxonomic and conservation status." This checklist is the seventh in a series of these produced for Texas mammals and is the most comprehensive yet assembled. A total of 207 species accounts are included: 148 native terrestrial species; 28 domestic, feral, and introduced species; and 31 marine mammals that have stranded on Texas beaches or been observed in the state's offshore waters. The checklist has been submitted as a Special Publication of the Museum of Texas Tech University and is being reviewed for publication in early 2024.

In another 2024 publication, I am co-authoring with Robert Bradley and Frank Yancey species accounts for the 11 taxa in the *Peromyscus boylii* species complex to be included in a new book "Handbook of the Mammals of Middle and South America: Rodentia—Cricetidae" that is being edited by Dr. Livia Leon-Paniagua and some of her Mexican colleages for publication in a book by Springer Nature.

For several years, I have been accumulating biographical information about the naturalist and bird-mammal collector, William Blaney Richardson, who worked primarily for the American Museum of Natural History and the British Museum of Natural History in the later part of the 19th century and in the early decades of the 20th century. He was a prolific collector of as many as 10-15,000 scientific specimens. The story of his life and career has yet to be published, and one of the most interesting aspects is the legacy that he left. One of his daughters married Francisco Navarro, Vice President of Nicaragua from 1937 to 1939, and one of his grandsons, the late Bill Richardson, was the Governor of New Mexico from 2003 to 2011 and served as Secretary of Energy and Ambassador to the United Nations under President Bill Clinton. Frank Yancey will be assisting me in compiling a list of the specimens he collected, and I will write a biography about his life and work. I anticipate completion and submission of this manuscript in 2024 to the Journal of Archival Natural History.

Aside from this work, I will continue undergoing cancer treatment, and Janet and I will be traveling as often as possible to visit our children in Connecticut and Barcelona, Spain, and to see our 4 grandchildren. We will also spend as much time as possible at our condo in Cholula, Puebla, and Puerto Vallarta, Nayarit-Colima, Mexico, our favorite two places in Mexico.

University of Central Oklahoma

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Research Interests, Projects, and Grants:
My research focuses on mammalian evolution biology, primarily in population genetics and molecular systematics. I am interested in using genetic markers to address conservation and evolutionary questions, with most of my research focusing on comparative hybrid zone studies and the identification of cryptic species. I also am interested in genomic drivers of the speciation process and local adaptations.

My current projects include:

- An evaluation of bobcat genetic diversity and structure in Oklahoma
- A long-term small mammal mark-recapture survey at UCO's Selman Living Lab to identify factors that impact population and community persistence (with Francisca Mendez-Harclerode, Gloria Caddell, Chad King, Sean Laverty, Richard Dolman, and Chris Goodchild)
- A survey of mammals at an old oilfield site and comparison of species diversity and richness between this site and a paired site in Cushing, Oklahoma

Graduate Students and Their Research:

- Claire Wiley – Hantavirus survey of small mammals at Selman Living Lab; genetic identification compared to field identification of small mammals at Selman Living Lab
- Nadiya Cavallo - A comparison of species richness, species diversity, and trap success on disturbed lands in Cushing, Oklahoma; genetic diversity in *Peromyscus* populations across Oklahoma

Undergraduate Students and Their Research:

- Jasleen Nagra – Genetic diversity in Oklahoma bobcats
- Terressa Evington, Kayli Newport – Assisting Claire with genetic species identification of Selman rodents
- Lillian Gunelson – Identification of internal and external parasites from small mammals at Selman Living Lab (in association with Dr. Wayne Lord)
- Delaney Donnohue – Microbiome analysis from fecal samples collected from small mammals at Selman Living Lab (under the direction of Dr. Matt Parks)
- Tianna Samuel – Tianna is interested in public health and will be assisting on a number of projects in the lab while developing a public health pamphlet focused on hantaviruses

Additional Information:

- After many years, Mammals of Oklahoma, Second Edition is finally complete! It will be available for purchase in July 2024.

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Research Interests, Projects, and Grants:
My research interests include spatial ecology and captive wild animal care.

My current projects and grants include:

- Impacts of moon illumination on rodent activity
- Mammal survey of Chandler Park, Tulsa County, Oklahoma

Undergraduate Students and Their Research:

- Use of camera traps to assess impacts on moon illumination on rodent activity at Selman Living Lab, Woodward, OK (Madison Baugh)

University of Michigan

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Research Interests, Projects, and Grants:
I consider myself a classically trained mammalogist, and as such, I use knowledge gained from observations made during fieldwork and through the examination of museum collections to answer questions about mammalian diversity. My research program focuses broadly on investigating the evolutionary patterns and processes that generate mammalian diversity. I also leverage natural history collections in the context of the extended specimen to examine museum voucher specimens in new and novel ways, e.g., emerging infectious diseases. My lab currently is funded by the National Science Foundation (Awards #1902105, #2101909, and 2228389) and the National Institute of Health (Project # 1R15AI80994-01).

Students and Their Research:

- Ava Fraleigh – Mammalian Trait Data

Other Lab Personnel:

- Paloma Calvin – Museum Technician
- Ashley Gorris – Research Assistant
- Lydia Thomas – Research Assistant

Additional Information:

I joined the Mammal Division at the University of Michigan Museum of Zoology (UMMZ) in June 2013. The UMMZ is administered by the Department of Ecology and Evolutionary Biology (EEB). I serve as the UMMZ Mammal Collections Manager and maintain a research appointment in EEB. With these two roles, I am fully involved in all aspects of the UMMZ Mammal Division, and I enjoy the challenge of integrating my experience working in museum collections with my own research program.

University of Houston—Downtown

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Research Interests, Projects, and Grants:

My research interests include molecular phylogenetics, phylogeography, and speciation of mammals. Current projects include molecular phylogenetics and taxonomy of lasiurine bats, including phylogeography of the Hawaiian Hoary bat; population genetics of bowhead whales (grant funded through the North Slope Borough); and genetic identification of bowhead whale parasites. I am partially funded by a grant from the North Slope Borough (PI) and an Organized Research and Creative Activities grant through UHD (PI).

Undergraduate Students and Their Research:

- Cindy Lopez is conducting camera trap surveys of mammals in the Houston area and molecular identification of whale parasites
- Evia Castillo, Alesha Luu, and Camila Sanabria Cardona are examining population genetics of bowhead whales

Texas Society of Mammalogists
Members' Business Meeting
11 February 2023

The meeting was called to order by President Ray Willis at 3:03 pm. The minutes of the 2022 Members' Business Meeting were approved.

Officers' Reports

Secretary-Treasurer. Secretary-Treasurer Tom Lee reviewed the Treasurer's Report for 2022. The beginning balance was $728.09 in the checking account and $132,713.25 in the investment account, for total assets of $137,619.06 to begin 2022. At the end of 2022, the balances were $4,556.09 in checking and $102,536.67 in the investment account, with total assets of $104,544.38. Tom expressed concern that the cost for the venue (TTU Center in Junction) has increased by over $4,000 since 2020 (our last in-person meeting). Tom suggested that the increase was due to inflation but that he would meet with the Financial Advisory Committee to discuss possibly increasing membership fees for future meetings. Tom did say that we would keep the cost down for students. The motion to approve the 2022 Treasure's Report was moved and seconded. Motion passed.

Permanent Secretary. Permanent Secretary Joel Brant briefly described the role of the position as the historian of the society, which is why he has been stalking everyone with a camera all weekend. Joel requested that anyone who had taken any pictures this weekend that they were willing to share to please email them to him. While Joel didn't have a detailed report available on the membership, he did mention that we had 86 individuals registered this year. Joel invited everyone to return next year for the 42nd meeting, whether they enjoyed this year's meeting or not.

Editor. Newsletter Editor Michelle Haynie reported that she prepares the Newsletter of the Society and maintains the website of the Society. She asked that those with research programs please contact her each year to update (or maintain) their profiles in the Newsletter. She also said that any announcements or news that members feel would be appropriate to post to the website or print in the Newsletter should be sent to her.

Reports of Committees

Phil Sudman, Chair of the Honorary Membership Committee, briefly described what Honorary Membership entailed and noted that his report would continue at the awards ceremony just before the banquet. Phil encouraged members who wish to nominate someone for Honorary Membership to contact any of the Executive Committee members.

Phil Sudman, Chair of the Financial Advisory Committee, reported that the investment account began the year with $132,713.25 and ended the year with $102,536.67. This represents a loss of about $30,000, primarily due to the poor performing market. The society did pull some funds from the investment account to cover society expenses but Phil commented that that was normal and expected. Phil commented that the purpose of the investment account is to enable the society to operate and to keep the cost of the meeting down. While we lost money this year, the society still has ~$100,000 and is in no financial danger. Phil showed a graph showing our investments over time. In 2013 we started this investment with $67,780 and now we have ~$100,000. Phil then asked for any insider trading information that might help the society.

Jessica Healy-LaPrice, Chair of the Student Honoraria Committee, announced that she would be giving her report during the awards ceremony immediately before the banquet speaker. Jessica commented that we had 16 judges who evaluated 13 posters last night and 16 talks this morning.

Michelle Haynie, Chair of the *ad hoc* Informatics Committee, reported that her committee is in charge of the TSM website and social media accounts. She asked that members send her any information that they would like to see included. Jessica Light has been active on this committee but has asked to step down so Michelle asked for volunteers for folks who are a little more active on social media. Michelle thanked John Hanson for help with the website and the abstract and registration forms.

Dana Lee, Chair of the *ad hoc* Conduct Committee, was not able to deliver the committee report due to having lost her voice so President Willis gave a brief background on the Code of Conduct (however she was present and able to use body language to agree with the President Willis' comments). Last year the society approved a Code of Conduct and the Conduct Committee has been working on developing an online reporting form for conduct violations. The society has appointed 3 Ombudspersons (Dana Lee, Jessica Light, & Russel Pfau) who the membership can bring issues to and who will address conduct violations. Dana was able to whisper that since there is not currently an online submission form, members can email the ombudspersons with concerns or issues. Both the Code of Conduct and the emails for the ombudspersons are on the website.

Krysta Demere, Chair of the *ad hoc* Auction Committee, reviewed the auction report from 2022. As the 2022 meeting was held remotely, there was no auction. Krysta did mention that the committee has some items that have been held over from previous meetings, especially books. Krysta solicited mammal themed artwork or knick-knacks for the auction.

Mike Tewes, Chair of the *ad hoc* Conservation Committee, first mentioned that the Texas Chapter of the Wildlife Society will hold their 2024 meeting on 21-23 February. TSM attempts to coordinate our meeting dates so that they do not conflict with the TCWS. Mike began by recognizing the members of the Conservation Committee, Thomas Yamashita, Georgia Harris, Cathy Early, and Robert Bradley. Georgia Harris introduced a Story Map on Chronic Wasting Disease (CWD) in white-tailed deer. The producers of the Story Map are asking for our endorsement and for permission to add our logo to the Story Map. The Story Map will be sent to legislators and TPW to advocate for efforts to address CWD. Robert Bradley & David Schmidly spoke in support of TSM endorsing this production. Krysta Demere spoke to TPW's efforts to contain CWD by establishing containment zones in portions of the state. A motion was made to approve the use of our logo for this production and was passed. A question then arose regarding the TSM logo. The current logo dating back to the mid-80s is not in great condition (due to repeated copying). Phil mentioned that he uses another armadillo logo on the Honorary Membership awards. Robert Bradley mentioned that Robert Baker had purchased the original artwork for the logo and had donated it to the society for our use. After the meeting the society was granted the use of an armadillo drawing by Terry Maxwell as our official logo (which was then used for the Story Map production).

Election of Officers

President Willis announced that the Executive Committee had nominated Dara Orbach (Texas A&M-Corpus Christi) for the office of President-elect. The floor was opened for additional nominations. No additional nominations were put forward. Dara was elected by acclimation.

Old Business

President Willis detailed his activities over the course of the year operationalizing the Code of Conduct. Specifically he mentioned that he appointed the 3 ombudspersons and established their terms on a 3-year rotation. Jessica Light is the ombudsperson who will be rotating off this year and President Healy-LaPrice will be tasked with appointing the new ombudsperson.

New Business

President Willis brought up a concern he has had regarding sharing trapping data with other mammalogists. Specifically, he mentioned that we don't have a centralized location for us to report our trapping success. Over the past couple of years he has noticed that trapping success has been down. Ray was wondering if we all had noticed a similar pattern. The Executive Committee discussed this issue and mentioned that researchers already report species captures as part of our permit reporting process with TPW. The group did feel that some mechanism to track trapping success across Texas would be beneficial. Perhaps a success percentage reported per county or some other such metric. A metric that would not impinge on researcher's publication efforts. Members speculated on establishing a database similar to iNaturalist or eBird where researchers could self-report their trap success. After some discussion, President Willis encouraged the membership to mull the concept over and revisit this idea next year.

President Willis opened the floor for other new business. Responding to the Secretary-Treasurer's and the Financial Advisory Committee's reports, Loren Ammerman recommended raising the membership cost for non-students for future meetings. Loren mentioned that even doubling the membership cost would still be relatively cheap as meetings go. In addition, in-person meetings will include auction revenue, which will help offset the cost. Robert Bradley and Ray Willis both mentioned that improving the auction will have a greater impact than increasing membership fees (especially with "better" auction items and more beer). Dara Orbach asked about the registration number that would allow us to "break-even" on costs. Tom Lee said that we do better when there are more the 100 registrations. Dara also asked about whether patron members would be willing to donate money in place of an auction item. David Schmidly recommended that we wait-and-see how the market reacts and revisit membership cost next year. Loren agreed with David but mentioned that we haven't raised membership fees in several years and we've repeatedly encountered cost issues. It is inevitable that the society will have to raise membership fees eventually. Dana Lee asked about the discounts the society offers to student presenters (registration discount, lodging discount, & t-shirt discount). Would it be advisable to reduce the number of presenter discounts? Phil Sudman charged Tom Lee and himself to look at the finances during the year and determine the best course of action. Phil was not in favor of reducing the student discounts. Students are what this society is about. Art Cleveland recommended the formation of an *ad hoc* committee for development to investigate ways to raise funds for the society (grants, fund raising, etc.). A student asked about establishing an online auction, perhaps administered throughout the year.

It was moved and seconded to hold the 2024 TSM meeting at the TTU Center at Junction. Motion passed. The 2024 meeting will be held February 16-18.

President Ray Willis expressed his gratitude that the society was able to meet face-to-face this year. TSM is Ray's favorite meeting and he has only missed 1 meeting since 2000. Ray thanked the TSM Officers for their efforts in preparing the meeting. Ray thanked everyone for the opportunity to serve the society.

The Members' Business Meeting was recessed at 3:45 pm.

The Members' Business Meeting was reconvened at 6:30 pm.

Jessica Healy-LaPrice, Chair of the Student Honoraria Committee, announced the winners of the presentation awards. Each winner received a cash award ($500 for the Packard Award and $400 for all others) and was recognized by the society with applause. Jessica congratulated all the presenters for their presentations and encourage everyone to submit abstracts next year.

Oral presentation award winners were:
1. Robert L. Packard Award — Stefanie Bergmanson, Texas State University
2. TSM Award — Danielle Deming, Texas Tech University
3. William B. Davis Award — Makayla Guinn, Texas Tech University
4. Bobby Baker Award — Halle Summers, Angelo State University
5. Rollin H. Baker Award — Adam Myers, Austin College

Poster presentation award winners were:
1. Clyde Jones Award (graduate) — Sufia Neha, Texas Tech University
2. Vernon Bailey Award (graduate) — Isham Azhar, Texas Tech University
3. Clyde Jones Award (undergraduate) — Katheryn Gray, Cameron University
4. Vernon Bailey Award (undergraduate) — Amanda Newman, Texas Tech University

Phil Sudman, Chair of the Honorary Membership Committee, continued his report from the Members Business Meeting. This year the committee received three nominations for Honorary Membership: Mike Dixon, John Hanson, and Russell Pfau. All three were recognized at the banquet and will receive their awards at the 2024 meeting.

Dianna Krejsa and Clint Perkins announced the winners of the Mammal Challenge. Emily Wright of Texas Tech University won the Student category of the Mammal Challenge. XXXX of XXXX won the Non-Student category of the Mammal Challenge.

The Members' Business Meeting was adjourned at 7:00 pm.

Respectfully submitted,
Joel G. Brant
Permanent Secretary

STUDENT AWARDS

These awards are made possible by the generous donations of the Society's members and by fundraising activities.

Robert L Packard Award – The Robert L. Packard Award is presented for the Best Overall oral presentation. Eligibility is open to any student who has not previously received this award. This award currently includes an honorarium of $500.

The Robert L. Packard Award was first awarded in 1985 for the best student presentation. In 1990, when the TSM Award was established, the Packard Award was designated for the best presentation in classical mammalogy. Since 1998, the Packard Award has been designated for the Best Overall oral presentation. The award was named in honor of Robert L. Packard (1928-1979), the founder of the Texas Society of Mammalogists.

TSM Award – The TSM Award is presented for the best oral presentation in mammalian molecular biology, evolution, and systematics by a graduate student. Eligibility is open to any graduate student who has not previously received this award. This award currently includes an honorarium of $400.

The TSM Award was established in 1990.

William B. Davis Award – The William B. Davis Award is presented for the best oral presentation in classical mammalogy at the organismal level by a graduate student. Eligibility is open to any graduate student who has not previously received this award. This award currently includes an honorarium of $400.

The William B. Davis Award was established in 1998 in honor of William B. Davis (1902-1995), a leading mammalogist in Texas and the first Head of the Department of Wildlife and Fisheries Sciences at Texas A&M University. Davis authored or co-authored five editions of *The Mammals of Texas* (1947, 1960, 1966, 1974, 1994).

Bobby Baker Award –The Bobby Baker Award is presented for the best oral presentation in mammalian molecular biology, evolution and systematics by an undergraduate student. Eligibility is open to any undergraduate student who has not previously received this award. This award currently includes an honorarium of $400.

The Bobby Baker Award was established in 2013 in honor of Bobby Baker (1986-2012), who was an active and award-winning undergraduate member of the Texas Society of Mammalogists.

Rollin H. Baker Award – The Rollin H. Baker Award is presented for the best oral presentation in classical mammalogy at the organismal level by an undergraduate student. Eligibility is open to any undergraduate student who has not previously received this award. This award currently includes an honorarium of $400.

The Rollin H. Baker Award was established in 2002 in honor of Rollin H. Baker (1916-2007), president of the Society in 1984-85 and an active member of TSM from 1984 until his death in 2007.

Clyde Jones Awards – The Clyde Jones Awards are presented for the best poster presentations by one graduate student and one undergraduate student in mammalian molecular biology, evolution, and systematics. Eligibility is open to any student who has not previously received the award at the respective academic level.

The initial Clyde Jones Award was established in 2004 in honor of Clyde Jones (1935-2015), Horn Professor of Biological Sciences at Texas Tech University. Jones was an active member of TSM since its inception in 1983 until his death in 2015, and was President of the Society in 1987-88.

Vernon Bailey Awards – The Vernon Bailey Awards are presented for the best poster presentations by one graduate student and one undergraduate student in classical mammalogy at the organismal level. Eligibility is open to any student who has not previously received the award at the respective academic level.

The initial Vernon Bailey Award was established in 2004 in honor of Vernon Bailey (1864-1942), Chief Field Naturalist and Senior Biologist for the Department of Agriculture's Bureau of Biological Survey (1897-1933). Bailey conducted the first and most complete biological survey of Texas, from 1889 to 1905.

TEXAS SOCIETY OF MAMMALOGISTS

Honorary Members

Class of 1985
W. Frank Blair (D)
Walter W. Dalquest (D)
William B. Davis (D)
Robert L. Packard (D)

Class of 1986
Rollin H. Baker (D)

Class of 1991
Howard McCarley (D)

Class of 1992
J Knox Jones, Jr. (D)

Class of 1995
Clyde Jones (D)

Class of 1997
Robert J. Baker (D)

Class of 1998
James Scudday (D)
Herschel Garner

Class of 1999
David J. Schmidly

Class of 2002
Art Harris

Class of 2003
Arthur G. Cleveland

Class of 2004
Ira F. Greenbaum
Robert E. Martin

Class of 2006
Ann Maxwell
Terry Maxwell (D)

Class of 2007
Guy N. Cameron
Earl G. Zimmerman

Class of 2008
John Bickham

Class of 2010
Robert C. Dowler

Class of 2011
Ron Pine

Class of 2013
Fred Stangl (D)

Class of 2015
Rodney Honeycutt

Class of 2017
Michael Tewes

Class of 2018
Lisa Bradley
Robert D. Bradley

Class of 2019
Loren K. Ammerman
Philip D. Sudman

Class of 2020
Thomas E. Lee
Marcia Revelez

Class of 2023
Michael T. Dixon
John D. Hanson
Russell S. Pfau

Patron Members

Jo Actkinson
Loren K. Ammerman
Amy Baird
Robert Baker (D)
Rollin Baker (D)
John Bickham
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Joel G. Brant
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Guy Cameron
Darin Carroll
Brian Chapman (D)
Ron Chesser
Scott Chirhart
Arthur G. Cleveland
Danielle Dillard
Michael Dixon
Robert C. Dowler
Cathy Early
Carla Ebeling
Herschel Garner
Jim Goetze
Ira F. Greenbaum
Meredith Hamilton
John Hanson
Michelle Haynie
Steve Hoofer
Mandy Husak
Michael Husak
Clyde Jones (D)
Stephen Kasper
Thomas E. Lee
Jessica Light
Robert E. Martin
Ann Maxwell
Terry Maxwell (D)
Kevin McKinney
Steve McReynolds
Anne Merchant
Chris Montag
Jim Patton
Clint Perkins
Russell Pfau
Caleb Phillips
Carl Phillips
Brenda Rodgers (D)
Duke Rogers
Kent Rylander
David J. Schmidly
Stephanie Shelton
Steve Smith
Phil Sudman
Michael Tewes
Ron Van Den Bussche
Christopher Walker
Kenneth T. Wilkins
Don Wilson
Ray Willis
Bernd Wursig
Earl Zimmerman