



ASNHC

ANGELO STATE NATURAL HISTORY COLLECTIONS

TWO NEW CURATORS



New Herbarium Curator, Dr. Carlos A. Maya-Lastra



New Curator of the Collection of Mammals,
Dr. Edson F. Abreu

CURATOR OF HERBARIUM

Dr. Carlos A. Maya-Lastra has pursued an exciting and adventurous career in biology. As a first-generation student, he earned his Bachelor of Science in biology and environmental education from the University of Quindío (Colombia) in 2007, focusing on the taxonomy of the plant family Euphorbiaceae. His academic journey continued at the Institute of Ecology A.C. in Mexico, where he obtained his master's degree in botany in 2014, completed his Ph.D. in botany in 2018, and delved deeper into the evolutionary history of *Cnidocolus*, a charismatic and stinging group of plants.

Throughout his career, Maya-Lastra has extensively researched the taxonomy and evolutionary history of various plant families, such as Euphorbiaceae, Adoxaceae, Lamiaceae and Sapindaceae. His dedication to mentoring students and sharing his knowledge reflects his ongoing commitment to the educational and scientific communities.

His commitment to the field of botany took Maya-Lastra to the renowned institutions of Columbia University and Yale University.

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CURATOR OF MAMMALS

Dr. Edson F. Abreu joined the faculty of the Biology Department at ASU after concluding a two-year postdoctoral appointment at the Richard Gilder Graduate School of the American Museum of Natural History (AMNH) in New York City. At AMNH, he was supported by the Gerstner Scholars Program that provides a prestigious and competitive postdoctoral fellowship to support groundbreaking research in biology, with an emphasis on genomics. His postdoctoral research was focused on the systematics, taxonomy and evolution of a charismatic and diverse group of mammals, tree squirrels. Specifically, he investigated species limits and evolutionary processes underlying complex speciation in the most widespread genus of South American squirrels, the genus *Guerlinguetus*. He also took advantage of this opportunity to expand his experience working with fine-scale, population-genetic analyses and broad-scale phylogenomics using different sources of front-line genomic data.

Although most recently Abreu has spent most of his time working in a museum setting, looking at preserved mammal specimens or DNA sequences, his academic journey traces back to an

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HERBARIUM

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At Columbia, he was a postdoctoral researcher and lecturer, conducting cutting-edge research in computational genomics, replicated evolution and reproductive isolation. Subsequently, he moved on to Yale, where he conducted postdoctoral research on the evolution of *Viburnum* from Bolivia and investigated the genome of *Viburnum lautum*, a non-model species.

Parallel to his biological career, Maya-Lastra also expanded his knowledge in software development, leveraging advanced computational techniques to enhance his research. His computational skills enable him to conduct intricate genomic and evolutionary analyses, unveiling hidden biological patterns

and extracting valuable insights from complex and massive data sets. This multidisciplinary approach enriches his contributions to evolutionary biology, making him a versatile scientist in computational biology.

In his current role as an assistant professor at Angelo State, Maya-Lastra humbly assumes the role of curator of the Herbarium, an essential and integrated part of the Angelo State Natural History Collections. In this capacity, he plans to contribute to advancing academic knowledge and research in plant diversity and evolution, keeping the doors open to the academic community.

MAMMALS

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adventurous history of field expeditions and field biology in South America. In fact, he became interested in studying mammals when he was still an undergraduate student in southern Brazil. During a college winter break in 2007, he volunteered on a research project focused on the conservation of jaguars in the Brazilian Pantanal – the world's largest tropical wetland – and this life-changing experience put mammals in his career path.

Abreu then earned his Bachelor of Science from the University of Santa Cruz do Sul, Brazil, in 2009, and his Master of Science from the University of São Paulo, Brazil, in 2014. For his master's thesis, he studied the non-volant small mammal fauna of the southeastern Brazilian Atlantic Forest and described a new rodent species. He earned his Ph.D. from the University of São Paulo, including a one-year program of doctoral research at the

Smithsonian Institution's Center for Conservation Genomics, in 2020. His dissertation research focused on the phylogenomics, diversification and biogeography of Neotropical tree squirrels.

As curator of the Collection of Mammals of the Angelo State Natural History Collections, Abreu is committed to the maintenance and growth of this important collection for Texas, as well as the U.S. In his vision, the university's scientific collections play a crucial role in educating and training students and young researchers, and these collections house essential knowledge to address our current biodiversity crisis. Abreu envisions creating a dynamic and diverse research group that welcomes students and young researchers here at ASU, while he also aims to maintain academic collaborations with established researchers at other institutions in the U.S. and South America.

COLLECTION BY THE NUMBERS: 2023 SPECIMEN TOTALS

Herbarium: 58,157
Mammals: 21,261

Birds: 3,586
Amphibians and Reptiles: 15,441

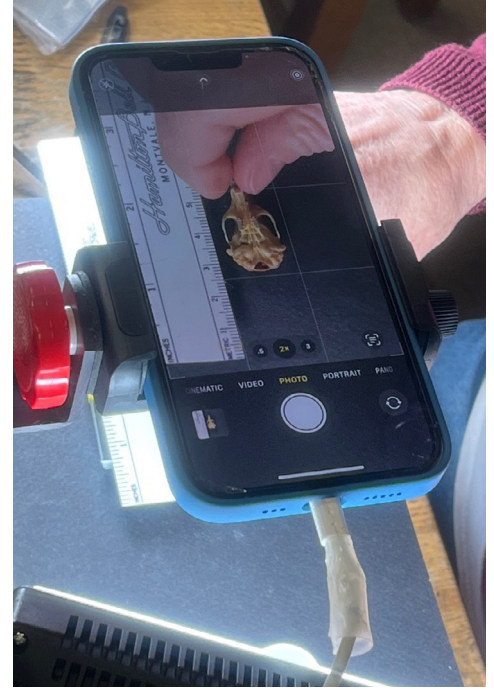
Genomic Resources (Tissues):
34,587 samples



AROUND THE COLLECTIONS

Dr. Duke Rogers and Dr. Nicole Lewis-Rogers visited the Collection of Mammals in February 2023 to take digital images of adult skulls and museum skins representing species of spiny pocket mice and harvest mice. They imaged approximately 420 specimens with the help of emeritus professor Dr. Robert Dowler. These images will be used as

part of a long-term project involving systematic revisions of the subfamily Heteromyinae and the genus *Reithrodontomys*. Tissue samples from most of these specimens had been used to develop a molecular phylogeny for spiny pocket mice in the *Heteromys pictus* species complex (Bateman et al. 2023, *J. Mamm.* 104:792-819).



ASNHC Collections Manager Makayla Easley left us in August to become a biology instructor at Hardin-Simmons University in Abilene, and to be closer to her family. An ASU undergraduate biology student, she traveled to Costa Rica with Drs. Dixon and Dowler in 2018. Watching nesting green sea turtles on the Caribbean beach at Tortuguero helped focus her interests. Despite the COVID-19 pandemic, she continued at ASU as a graduate student. Her master's thesis described the parasites of six common species of aquatic turtles in the Concho Valley, and she deposited at least 72 turtle specimens in the ASNHC Collection of Reptiles and Amphibians.



Following two major field investigations during the summer of 2023 on the Rio Conchos and its tributaries in Chihuahua, Mexico, Cesar Rodriguez met up and worked with Dr. David Berg's team from Miami University of Ohio in early September. This group is conducting a multi-year assessment of the endangered Texas Hornshell (*Popenaias popeii*) in the Black River of New Mexico. This experience provided Rodriguez with both the academic approach, as well as the cutting-edge conservation techniques, currently used in working with a federally listed endangered freshwater bivalve.



WATERFOWL EXHIBIT AT THE MAYER MUSEUM

In November 2022, a new ASNHC exhibit in the Mayer Museum opened. It was titled “Waterfowl of North America” and featured numerous ducks, geese and a swan from across the continent. Most of the specimens were donated by Wayne Milligan. Our office coordinator, Renee Robbins, and her husband, Clif, helped mount a duck nest box and decorate the exhibit to give it a realistic wetland feel. Our most interesting taxidermy was a recreated Labrador duck. These birds went extinct in the late 1800s. Milligan acquired the specimen that was created out of feathers and pieces of other species to closely mimic an actual Labrador duck.



Moving taxidermy specimens of ducks from the ASNHC to the Mayer Museum to build the exhibit.



One section of the waterfowl exhibit highlighted the duck nest box.

WHERE ARE THEY NOW?

Dr. Robert Dowler

A member of the biology faculty for over 30 years and longtime curator of the Collection of Mammals, Dr. Robert Dowler retired at the end of the summer 2022 semester. He was awarded the title of Distinguished Professor of Biology Emeritus in May 2023 during a ceremony in the Houston Harte University Center.



Dr. Dowler (center) presented with certificate by ASU Provost Dr. Donald Topliff (left) and ASU President Ronnie D. Hawkins, Jr. (right).

Marcy Revelez

Formerly the ASNHC collections manager, Marcia (Marcy) Revelez now leads the CDC Biorepository (CBR) for the Centers for Disease Control and Prevention in Atlanta, Georgia. As the largest federal biorepository with nearly 7 million biological and environmental samples, CBR strives to maintain best practices and standards in all aspects of sample management. Revelez originally joined the CDC as a collections manager in 2016. Her career in natural history collections began while working on her B.S. and M.S. degrees at Angelo State. The most pivotal moment for her was meeting Dr. Robert Dowler and being offered an opportunity to work in the ASNHC. After 12 years as a collections manager at the Sam Noble Oklahoma Museum of Natural History, she decided to return to her roots, accepting the position as the first collections manager for ASNHC. She continues to apply her talent, experience and training with collections at the CBR.



Sydney Decker

Sydney Decker enrolled at ASU with a pre-med focus set on padding her medical school applications with research experience, but quickly became enthralled by molecular systematics through a first-year research scholarship working with Dr. Loren Ammerman. Throughout her four years, Decker conducted research on northern yellow bat phylogeography and worked in the ASNHC as an osteoscribe and specimen preparator, graduating with her B.S. in biology in 2019. These experiences were paramount to her acceptance into a Ph.D. program at Ohio State University, where she is currently in her fifth year. Her dissertation research uses genomics, 3-dimensional micro-CT imaging and machine learning to develop methods of species delimitation, with yellow bats as a test case. She still works closely with natural history collections and has taught labs for OSU Ecology and Evolution of Mammals classes using collection specimens. She looks forward to finishing her Ph.D. soon and to continuing to conduct the research that she loves.



BIOLITZ HIGHLIGHTS FROM KNICKERBOCKER RANCH

In 2023, the Biology Department conducted BioBlitzes at two local ranches. In late April, students, staff and faculty visited Knickerbocker Ranch southwest of San Angelo. Though our area was again gripped by persistent drought, BioBlitzers fought through the dust, and with the help of iNaturalist, documented 149 species of plants and animals. A special thanks to Department of Biology alumnus Rose Wilhoyt for joining us and assisting with the collection and identification of invertebrates. In the late days of summer and with classes just underway, BioBlitzers met at another local ranch to again search for and identify every species

they could find. The department was excited to have new faculty members and new ASNHC curators Dr. Edson Abreu and Dr. Carlos Maya-Lastra join us for their first BioBlitz. Notably this year, Dr. Loren Ammerman, her graduate students and Abreu's Mammalogy class stayed late on Friday night and were rewarded with an abundance of bat captures. Notable captures included several evening bats (*Nycticeius humeralis*) and an eastern red bat (*Lasiurus borealis*). We are grateful to the owners of these two ranches for allowing us to conduct our BioBlitzes and for their continued support of ASU and the ASNHC.



Dr. Ben Skipper explains the process of banding birds to the BioBlitz participants.



Natalie Villanueva and Weston Wilber collect plants for the ASNHC Herbarium.



Dr. Michael Dixon demonstrates how to safely handle a water moccasin.

AWARDS

Jeff Roth was recognized as the Outstanding Graduate Student in the Department of Biology, Angelo State University (April 2023).

PUBLICATIONS – STUDENTS AND FACULTY

Benson, D. J., J. C. Perkins, K. P. Jefferson, R. C. Dowler, R. D. Stevens, and C. C. Rega-Brodsky. 2023. Examination of Plains Spotted Skunk (*Spilogale interrupta*) burrow systems. *Southeastern Naturalist* 22:352-363.

Delesalle, V. A., B. E. Tomko, A. C. Vill, K. Boas, G. P. Krukonis. 2022. Forty years without family: Three novel bacteriophages with high similarity to SPP1 reveal decades of evolutionary stasis since the isolation of their famous relative. *Viruses* 14:2106.

Duncan-Lowey J., E. Crabill, A. Jarret, S. C. O. Reed, and C. R. Roy. 2023. The *Coxiella burnetii* effector EmcB is a deubiquitinase that inhibits RIG-I signaling. *Proceedings of the National Academy of Sciences* 120(11). e2217602120.

Gulas-Wroblewski, B. E., R. Gorchakov, R. B. Kairis, R. C. Dowler, and K. O. Murray. 2023. Prevalence of *Trypanosoma cruzi*, the etiologic agent of Chagas Disease, infection in Texas skunks (Mammalia: Mephitidae). *Vector-borne and Zoonotic Disease* 23:18-28.

Perkins, J. C., A. A. Gibson, B. D. Wolaver, B. J. Labay, J. P. Pierre, and R. C. Dowler. 2022. An evaluation of detection methods for the plains spotted skunk. *Wildlife Society Bulletin*. 46:e1376.

Vill, A. C., V. A. Delesalle, B. E. Tomko, K. B. Lichty, M. S. Strine, A. A. Guffey, E. A. Burton, N. T. Tanke, and G. P. Krukonis. 2022. Comparative genomics of six lytic *Bacillus subtilis* phages from the Southwest United States. *PHAGE: Therapy, Applications, and Research* 3:171-178.

PRESENTATIONS – STUDENTS AND FACULTY

Buckel, A., and L. K. Ammerman. 2023. Effectiveness of simulated water as a lure for bats in the Big Bend region. Texas Society of Mammalogists, Junction, Texas, and Texas Academy of Science, San Angelo, Texas.

Burt, A. and B. R. Skipper. 2023. Road fatalities of butterflies in Crockett County, Texas. Texas Academy of Science, San Angelo, TX.

Crowley, B. and B. R. Skipper. 2023. The effects of urban stimuli on the exploratory behavior of *Acheta domesticus*. Texas Academy of Science, San Angelo, TX.

Dorman, C., B. Amos, and B. R. Skipper. 2023. Factors affecting the germination success of *Callirhoe scabriuscula*. Texas Academy of Science, San Angelo, TX.

Easley, M., M. Dixon, and N. Negovetich. 2023. A survey of parasites of freshwater turtles in the Concho Valley. Texas Academy of Science, San Angelo, Texas.

Fuentes, F. and B. R. Skipper. 2023. Assessing the impacts of Winter Storm Uri on Texas birds. Texas Academy of Science, San Angelo, TX.

McCoy, W. M., and L. K. Ammerman. 2023. Molecular systematics of *Sauromys* and *Platymops* within Molossidae. Texas Society of Mammalogists, Junction, Texas, and Texas Academy of Science, San Angelo, Texas.

Roth, J. and B. R. Skipper. 2023. A molecular reevaluation subspecies within the Bewick's wren (*Thryomanes bewickii*). Texas Academy of Science, San Angelo, TX.

Summers, H., L. K. Ammerman, R. Scott, and R. C. Dowler. 2023. DNA barcoding of *Peromyscus* from the Davis Mountains in Texas. Texas Society of Mammalogists, Junction, Texas, (won Bobby Baker Award) and Texas Academy of Science, San Angelo, Texas.

FACULTY/STAFF GRANTS

Loren K. Ammerman. 2023-2025. Summarizing Population Trends and Foraging Behavior of Mexican Long-nosed bats (*Leptonycteris nivalis*) in Emory Cave. Texas Comptroller of Public Accounts Natural Resources Program, \$121,655.

Robert C. Dowler and Richard D. Stevens. 2023-2025. Survey of the Hooded Skunk in the Trans-Pecos Ecoregion. Texas Comptroller of Public Accounts Natural Resources Program, \$125,545.

Ben R. Skipper. 2023-2024. Conservation Genetics of the Endangered Texas Poppy-mallow, *Callirhoe scabriuscula*. ASU Faculty Research Enhancement Grant, \$14,308.

STUDENT GRANTS

Mary Anderson. 2023-2024. Song dialects of mountain chickadees (*Poecile gambeli*) in sky islands of western Texas and New Mexico. Head of the River Ranch Research Grant. Advisor: B. R. Skipper

James Bautista. 2022-2023. The effect of fructose 1,6-bisphosphatase enzymes on autophagy regulation. Faculty Mentored Undergraduate Research and Tri-Beta grants. Advisor: E. Crabill

Brianna Douglas. 2023-2024. Molecular determination of nestling diet in the Bewick's wren (*Thryomanes bewickii*). ASU Graduate Research Fellowship. Advisor: B. R. Skipper

Alix Kosmala. 2023-2024. Comparative soil analysis at Texas poppy-mallow sites. ASU Graduate Research Fellowship. Advisor: B. R. Skipper

Mariah Martinez. 2023. Identification of unknown moth species using molecular barcoding methods. ASU Faculty Mentored Research Grant. Advisor: L. K. Ammerman

Will McCoy. 2022-2023. Molecular systematics of flat-headed bats (*Sauromys* and *Platymops*). ASU Graduate Research Fellowship. Advisor: L. K. Ammerman

Anna Rodriguez. 2022-2023. Host-pathogen interactions: Determining the function of CBU0513, a *Coxiella burnetii* virulence protein. ASU Graduate Research Fellowship and HARR Research Grant. Advisor: E. Crabill

Karen Soto-Castro. 2022-2023. How the innate immune system impacts intracellular bacterial growth. Faculty Mentored Undergraduate Research Grant. Advisor: E. Crabill

Halle Summers. 2022-2023. DNA barcoding of *Peromyscus* from the Davis Mountains in Texas. ASU Faculty Mentored Research Grant. Advisor: L. K. Ammerman



THE ASNHC MISSION STATEMENT

The Mission of the Angelo State Natural History Collections is to:

- Provide a permanent, well-maintained, active reference collection of the world with an emphasis on the flora and fauna of the Concho Valley and surrounding areas.
- Provide a learning laboratory for ASU students to facilitate and encourage research and education.
- Promote awareness, understanding and appreciation of global biodiversity.
- Contribute specimens and data for study by research scientists around the world.

PLEASE HELP US GROW THE TERRY C. MAXWELL ENDOWMENT IN NATURAL HISTORY!



Our endowment to support the Angelo State Natural History Collections and student and faculty research in natural history began in 1998. In 2017, with the passing of professor and ornithologist, Terry Maxwell, we renamed it the Terry C. Maxwell Endowment in Natural History. In this – our 25th year – we hope to begin a major effort to push the principal to \$200,000. Small or large, your donation to this endowment will make a difference in the future of the Angelo State Natural History Collections and the Department of Biology. Go to angelo.edu/terrymaxwell or call 325-942-2116 to donate.

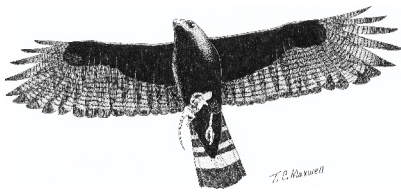
For a \$25 donation or greater to the Terry C. Maxwell Endowment in Natural History, you can select an ASNHC baseball cap or an ASNHC T-shirt as a thank-you gift. The growth of this endowment could provide the means to expand the collections with new specimen cases, update technology used for the curation of specimens and upgrade our database management system.

We have a new T-shirt design for donors! If you missed getting your ASNHC shirt last year featuring the ASU Ram, we still have most sizes available! Contact the ASNHC at asnhc@angelo.edu or go to angelo.edu/maxwell.

2024 ASNHC CALENDAR

NATIVE SPECIES OF TEXAS

Illustrations by Kelsey J. Cattaneo, Sydney K. Decker, Krysta D. Demaree, Bathany S. Gussardo, Adina Hernandez, Diana M. Krieger, Terry C. Maxwell and Ross D. Northcutt



Restricted to arid and semi-arid regions of southwestern North America, zone-tailed hawks (*Buteo albionotatus*) can be found at low densities in a variety of habitats during their summer breeding season. With their diet of small reptiles and mammals, zone-tailed hawks are at home in the pine forests of New Mexico as they are in the dry canyons of Texas' Big Bend. artwork by Sydney Decker

CALENDAR FUNDRAISER

This year we are producing a 12-month 2024 calendar that will feature artwork by Dr. Terry Maxwell, as well as seven alumni of ASU and fans of the ASNHC. Go to angelo.edu/maxwell or contact ASNHC@angelo.edu.



angelo.edu/terrymaxwell

THANK YOU! YOUR DONATIONS MAKE A DIFFERENCE.

Thank you to all who support the ASNHC in all the ways that you do! Your support is vital to our growth and maintenance. Thanks to Keith Arnold, Richard Brown, Max and Will Eschberger, James J. Fulgham, Adina Hernandez, Ryland Howard, Klaus Koepfli, Stephen Kent Mayer, R. Clark Pfluger, Robert D. Purrington, Maggie Schwab, Ben Skipper, Sun City Texas Community Association, Drew Sykes and several anonymous donors.



Angelo State Natural History Collections

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