

Annual Report 2025



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

Interdisciplinary research, international collaboration, species discovery, collections growth, dissemination of results, and educating the next generation of conservation biologists.

Table of Contents

Executive Summary.....	3
Curatorial Staff 2025.....	4
Emeritus Curators 2025.....	4
Mission Statement	4
Vision Statement.....	4
Collections Activity	5
Collection of Fishes	5
Fishes 2025 Projects.....	7
Collection of Amphibians and Reptiles	8
Amphibians and Reptiles Projects 2025	11
Collection of Birds	13
Birds 2025 Projects	16
Collection of Mammals	18
Mammals 2025 Projects	20
Student Engagement and Mentoring	22
Teaching Use	22
Graduate Student Advising	22
Student Workers	22
Internships	23
Community Engagement	24
BRTC Operations	25
Curator Authored Peer Reviewed Journal Articles 2025	27
Publications Citing BRTC Specimens 2025	30

Executive Summary

In 2025, the Biodiversity Research and Teaching Collections (BRTC) experienced continued growth in collections, research productivity, and educational engagement. The unit was staffed throughout the year by one Collections Manager (Prestridge), and in April 2025 successfully recruited a second Collections Manager, Dr. Vinicius Espindola. Following this addition, responsibilities were restructured such that Prestridge assumed oversight of the Birds and Mammals collections, while Dr. Espindola was assigned responsibility for Amphibians, Reptiles, and Fishes. Both positions are supported by the Department of Ecology and Conservation Biology. Faculty Curators (Conway, Fitzgerald, Light, and Voelker), who maintain active teaching and research appointments within the department, continued to provide leadership across the collections. Additional contributions were made by Adjunct Curator Wicksten (BIOL) and Emeritus Curator Arnold, the latter of whom remained actively engaged in a remote capacity.

The BRTC collections continued to expand substantially in both size and taxonomic breadth. The Collection of Fishes accessioned 27,732 specimens across 884 lots, bringing its total holdings to 1,016,879 specimens distributed among 66,412 lots. The Collection of Amphibians and Reptiles added 202 specimens, increasing its total to 112,209 specimens. The Collection of Birds incorporated 946 specimens, for a total of 35,247 specimens, while the Collection of Mammals added 7 specimens, bringing its total to 68,851 specimens. Collectively, the BRTC registered 27 new accessions in 2025, representing material from across the state of Texas and the Gulf of Mexico, as well as international collections from Cameroon.

The collections continued to support a wide range of research activities. A total of 58 loans of specimens were issued to both domestic and international institutions, and the BRTC hosted numerous on-site research visitors. Scholarly output remained strong, with BRTC curators and students publishing 19 peer-reviewed articles during the year. In addition, 27 peer-reviewed publications citing BRTC specimens were produced. These works appeared in a range of respected journals, including *Journal of Fish Biology*, *Journal of Herpetology*, *Biology Letters*, and *Journal of Zoological Systematics and Evolutionary Research*, among others.

Research and collections activities were further supported through extramural funding from agencies including the National Science Foundation, Texas Parks and Wildlife Department, United States Geological Survey, and the Department of Defense. Faculty Curators continued to mentor graduate students as advisors and committee members, facilitating research that both contributes to and utilizes the collections. Undergraduate engagement remained an important component of BRTC operations, with internships, directed studies, and writing-intensive courses (ECCB 484/485/285) offered across all collections. In 2025, three students received course credit through these opportunities. Volunteer participation expanded to approximately 40 individuals, including undergraduate and graduate students as well as community members. Additional support was provided through departmental and external funding, which supported one and four undergraduate assistants, respectively, in part-time roles focused on curation and research.

The BRTC also maintained a central role in undergraduate and graduate instruction. Laboratory sessions were hosted for seven ECCB courses across the spring and fall semesters (ECCB 302, 311, 314/614, 315, 316, 401, and 402), collectively serving approximately 600 students. These courses were taught by BRTC Faculty Curators, with ECCB graduate students regularly serving as teaching assistants. Research collections were regularly incorporated into instructional activities to supplement teaching collections. The BRTC additionally provided facilities and resources for BIOL 430 (Biological Imaging), in which students applied advanced imaging techniques to generate three-dimensional models of specimens.

Curatorial Staff 2025

Kevin W. Conway, Faculty Curator of Fishes

Vinicius Espindola, Collections Manager of Reptiles, Amphibians and Fishes

Lee A. Fitzgerald, Faculty Curator of Reptiles and Amphibians

Jessica E. Light, Faculty Curator of Mammals

Heather L. Prestridge, Collections Manager of Birds and Mammals

Gary Voelker, Faculty Curator of Birds

Mary K. Wicksten, Faculty Curator of Marine Invertebrates

Emeritus Curators 2025

Keith A. Arnold, Faculty Curator Emeritus of Birds

John D. McEachran, Faculty Curator Emeritus of Fishes

Mission Statement

Texas A&M University's Biodiversity Research and Teaching Collections (BRTC) are dedicated to the curation of vertebrate specimens and their data in support of education, research, and conservation. The BRTC enhances collaborative and global reach through sharing digitized data sets broadly and publicly, welcoming use of our data and specimens in developing new understandings through research. Furthermore, the BRTC's mission is to support the Department of Ecology and Conservation by providing an interactive hands-on venue and resources for graduate and undergraduate research, education, and job training to prepare and grow the next generation in conservation scientists who will be able to assume roles in leadership, responsibility, and service to society.

Vision Statement

Texas A&M University's Biodiversity Research and Teaching Collections vision is to be a world-class natural history collection that supports Texas A&M University and the Department of Ecology and Conservation Biology's unified visions of advancing interdisciplinary research, elevating graduate and professional education, and engaging with Texas and beyond to enhance our impact.

Collections Activity

Collection of Fishes

The Collection of Fishes (Conway, Espindola) incorporated 9 accessions of new material in 2025, representing 25,735 specimens divided across 884 lots. In 2025, the collection surpassed the major milestone of 1 million specimens and is now ranked 26th of 38 major ichthyological collections in the US based on the number of cataloged specimens according to the American Society of Ichthyology and Herpetology. Our collection now contains 1,016,879 specimens divided across 66,412 lots, representing 4,118 species and 1,614 families of fishes. Several species, one new genus, and one new family previously unrepresented in the collection were added in 2025 (Table 1). We are particularly excited to report the addition of five holotype specimens to the collection in 2025, bringing the number of type specimens in the Collection of Fishes to seven. The new holotype specimens (Figure 1) are associated with the description of five new species of freshwater fishes from the southwestern United States (including Texas) and are listed in Table 1.

Table 1 - List of taxa newly introduced to the BRTC's Collection of Fishes in 2025

Family	Scientific name	Common name	Note
Eurypharyngidae	<i>Eurypharynx pelecanoioides</i>	Pelican eel	A rare gulper eel donated from VIMS.
Leuciscidae	<i>Notropis lucifer</i>	Devils River sand shiner	New species described in 2025; holotype catalogued at BRTC
Leuciscidae	<i>Notropis multicorniculatus</i>	Plains sand shiner	New species described in 2025; holotype catalogued at BRTC
Leuciscidae	<i>Notropis oblitus</i>	Plateau sand shiner	New species described in 2025; holotype catalogued at BRTC
Nettastomatidae	<i>Facciolella equatorialis</i>	Dogface witch eel	New species acquired from a donation from Scripps.
Poeciliidae	<i>Gambusia pyrrhos</i>	Flame gambusia	New species described in 2025; holotype catalogued at BRTC
Poeciliidae	<i>Gambusia echelleorum</i>	New Mexico gambusia	New species described in 2025; holotype catalogued at BRTC

During 2025, the Collection of Fishes facilitated a total of 15 traditional loans to both national and international researchers, including those affiliated with Southeastern Louisiana University, Northern Arizona University, University of North Texas, Saint Louis University, University of North Georgia, Scripps Institution of Oceanography, Virginia Institute of Marine Science, Yale Peabody Museum, University of Georgia, and Rice University. Two international loans involved shipment of specimens to colleagues at the Pukyong National University (Republic of Korea) and the Royal Ontario Museum (Canada). A small, but diverse collection of specimens was also gifted to Northwest Missouri State University to enhance the Ichthyology teaching collection at that institution. In 2025, the collection also accepted a number of notable specimens from other collections, including a rare deep-sea Pelican eel (Eurypharyngidae) from the Virginia Institute of Marine Science, a Dogface witch eel (Nettastomatidae) from the Scripps Institution of Oceanography (both representing new taxa for the

collections), and a collection of goliath specimens (including an adult Ocean sunfish (Molidae)) from the University of Southern Mississippi Gulf Coast Research Laboratory. A notable improvement to the collection in 2025 was the installation of a large (12.5' x 4.5' x 3') custom-built steel coffin capable of holding over 4,700 liters of alcohol. This newly installed steel container replaces an older dilapidated wooden container and was purchased using grant funding from the National Science Foundation. The new container houses our largest specimens, including a rare Bigeye sand tiger shark and the newly acquired Ocean sunfish. Specimen data from the Collection of Fishes continues to be broadly discoverable via several web portals including VertNet.org, iDigBio.org, and gbif.org. Other portals, including the Fishes of Texas, Fishnet2, and GGBN, continue to host cached data from the Collection of Fishes. The collection also hosts 497 unique CT datasets of BRTC fishes on the publicly accessible 3D data repository Morphosource.org.



Figure 1 - TCWC 21104.01, holotype of New Mexico Gambusia Gambusia echelleorum (photographed in life, above, and in preservative, below); This specimen is one of five new holotype specimens added to the Collection of Fishes in 2025.

In 2025, the Collection of Fishes hosted numerous on-site visitors, including researchers from the Virginia Institute of Marine Sciences, the National Museum of Natural History, Rice University, Lamar University, and the Corpus Christi Museum of Science and History. In January, the Collection of Fishes also hosted a continuing education workshop on native fish conservation for the 2025 annual meeting of the Texas Chapter of the American Fisheries Society, held in College Station. This workshop was attended by 86 participants and represents one of the largest events held within the BRTC in recent years. In late May, the Collection of Fishes also hosted a group of 12 graduate and undergraduate students from TAMU and TAMU-CC enrolled in Dr. Conway's advanced ichthyology course (ECCB 314/614 – Down River: Biology of Gulf Coast Fishes). These students sorted and identified over >2,500 specimens collected from the Guadalupe River basin of Texas during a one-week field course held earlier in that month. These efforts led to the addition of 225 lots to the collection, meaning that 25% of the material added to the collection in 2025 was collected, prepared and identified by students.

Fishes 2025 Projects

NSF CSBR: Crucial upgrades to specimen storage, organization, and database management at the Texas A&M Collection of Fishes (Conway and Prestridge)

This project, funded by the National Science Foundation, aims to: (1) re-organize the Texas A&M Collection of Fishes to achieve an overall more efficient use of a limited collections area, with adequate space to enable future growth; (2) secure the future of valuable oversized (10–14') specimens that are currently housed in a container that is inadequate and failing; and (3) complete crucial and long overdue data management platform upgrades that will enable not only more efficient basic data management but enhance our ability to provide complete records for our extended specimens (e.g., those with images, media, field notes). These activities will rejuvenate our infrastructure available for fundamental ichthyological education, unique research, and discovery at Texas A&M University and regionally.

In 2025, four undergraduate student workers and one volunteer continued to work on this project, aiding the installation of new shelving in the main collection range. A custom-built steel coffin was installed allowing our largest specimens to be transferred from an older wooden tank to their new permanent home. This grant will end in May 2026.

TX-FISH-DNA: A Regionally-Focused DNA Barcode Interface to Enhance Identification and Monitoring of the Freshwater, Estuarine, and Marine Fishes of Texas (Conway and Voelker)

In collaboration with Dr. David Portnoy (TAMU-CC), Dr. Gary Voelker (TAMU), and researchers from TPWD inland fisheries (Dr. Preston Bean) and TPWD Coastal Fisheries (Dr. Joel Anderson), Dr. Conway is developing a regionally focused tissue bank and DNA barcode database for the ichthyofauna of Texas. This database will fuel regional DNA-based research on freshwater, estuarine, and marine fishes (e.g., standard barcoding, metabarcoding, eDNA) by providing access to expert verified tissues and mitochondrial DNA sequences associated with voucher specimens housed in the Collection of Fishes. Part one of this ambitious project involves estuarine and marine fishes and part two involves freshwater fishes. This project involves both undergraduate and graduate student researchers and could potentially result in >1,500 high quality voucher specimens (associated with photographs and tissues) being added to the collection. The project has resulted in three publications to date, including the description of two new species from Texas and New Mexico. This project is ongoing.

TX Comptroller: Surveys of Freshwater Fishes Inhabiting the Neches and Sabine River Drainages of Texas (Conway)

In collaboration with Drs. Joshua Perkin (TAMU, PI), Carmen G. Montaña (Stephen F. Austin University, co-PI), and Kole Kubicek (Lamar University, co-PI), Dr. Conway (also co-PI) is aiding surveys of freshwater fishes inhabiting the Neches and Sabine River drainages of Texas. This project is funded by the TX Comptroller and aims to compare historical survey data (compiled in the 1950s) to that of contemporary data compiled from recent surveys conducted by the research team. To date, >125,000 specimens have been generated through field activities associated with this project, all cataloged within the collection. This grant will end in April 2026.

Collection of Amphibians and Reptiles

In 2025, the Collection of Amphibians and Reptiles catalogued 202 specimens into the collection that now totals 112,209 specimens (Figure 2). Our collection currently contains 2,507 species in 114 families, with outstanding taxonomic strengths in turtles, snakes, lizards, and important geographic representation of herpetofauna from Texas, SW USA, Mexico, and South America. The collection of amphibians and reptiles at Texas A&M is among the largest university-based herpetological collections at universities in the USA and world renowned.

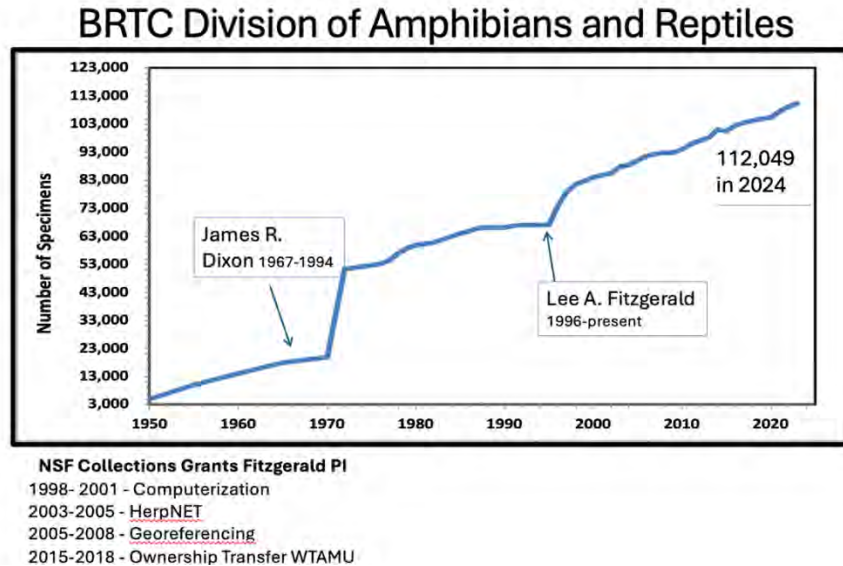


Figure 2 - Growth in the Collection of Amphibians and Reptiles from 1950 through 2024.

In 2025, Dr. Vinicius Espindola joined BRTC as Collections Manager for the collections of Fishes and Amphibians and Reptiles. Our first priority has been re-labeling of the thousands of jars in the collections. This effort at re-curation is a significant and costly task. It involves cross-checking the contents of each jar with the digital catalog and printing a new jar label. Dr. Fitzgerald and Dr. Espindola developed a system of organization where any jar with more than 11 specimens receives a “Jar Number” within its own family (e.g., *Nerodia erythrogaster*, Colubridae, jar number 18). This protocol improves users’ ability to know the contents of each jar. It also avoids costly and time-consuming printing of new jar labels every time a specimen is added to a jar (Figure 2).

This effort is ongoing and coupled with re-identification of problematic specimens, ethanol replenishment, replacement of worn jar lids, and re-shelving. Dr. Espindola has printed more than 800 new labels for the new system. During this process, we found 43 specimens previously considered lost.

Dr. Espindola has also been working to catalog the backlog of specimens from previous expeditions.

Most recent specimen accessions are from Texas. Specimens were collected by faculty members, staff, current and former students, and research collaborators.

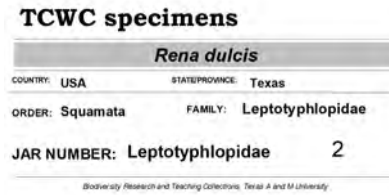


Figure 3 - Example jar label created with new labeling system. To date, more than 800 labels have been recreated to replace outdated labels. This also includes cross-referencing specimen numbers and correcting identifications. This process already recovered 43 specimens thought to be lost.

The Collection of Amphibians and Reptiles hosted three research visitors and processed eight loans to various institutions, including Newcastle University, the University of California, Texas A&M University, Rice University, and the Iziko South African Museum; Table 2). Herpetologists contacted our collections manager and curator to request photographs and measurements of specimens from Pennsylvania Western University, St. Edward's University, Oklahoma State University, Universidad Nacional Autónoma de México, Sam Houston State University and others. We also fulfilled ~20 requests to photograph and measure specimens for outside researchers. By providing this help, we reduce the risks of mailing and transporting irreplaceable specimens around the globe. Requests for photographs are an important and increasing use of research specimens. Specimen photographs that allow examination of species traits are especially valuable for researchers in foreign countries because it is difficult and risky to ship physical specimens overseas. A priority is to develop a better system for reporting these kinds of uses of the collection. Also, our specimens are displayed online on global online databases such as the Global Biodiversity Information Facility (GBIF), the USA-based portal for vertebrate specimens VertNet. The Collection of Amphibians and Reptiles also provide access to special-purpose images, such as CT scans that were accessed at Morphosource. For example, one of our specimens of the Chinese Alligator is accessed regularly by independent researchers. In 2025, the collection was visited by local herpetologists, ecologists, and artists who examined specimens for their research, teaching and art.

Table 2 - Loans and a partial list of information requests from the Division of Amphibians and Reptiles in the Biodiversity Research and Teaching Collections, Texas A&M University to other institutions. Loans consisted of whole specimens or tissue samples used for genomic research. Not listed are dozens of information requests directly to BRTC, and also indirectly through the Global Biodiversity Information Facility (GBIF) and USA-based VertNet nationwide online specimen portal. The Division also fulfilled

requests for in-house specimen examination and photographic images of specimens, which is increasingly common and saves time, money, and avoids risk of shipping irreplaceable specimens.

Borrowing institution	Loan or Info	Description
Clarke University	Loan	<i>Amphisaenia</i> specimens
University of Alabama	Information	<i>Sternotherus</i> specimens
Water Institute Louisiana	Loan	<i>Macrolemys</i> tissues; <i>Deirochelys</i> tissues
Museum Vert Zoology, UC Berkeley	Loan	<i>Anyelotropis</i> specimens
St. Edward's University	Loan	<i>Gerrhonotus</i> , <i>Sceloporus</i> , <i>Thamnophis</i> tissues
University Texas El Paso	Loan	<i>Philothamnus</i>
Univ. Autonoma Nacional Mexico	Information	<i>Crotalus</i>
University of New Mexico	Information	<i>Aspidoscelis</i>
Texas Christian University	Information	<i>Alsophis</i>
Univ. Nac. La Plata, Argentina	Information	<i>Acanthochelys</i>
Oklahoma State University	Loan	<i>Bufo woodhousei</i>
Rice University	Loan	various lizard species for comparative morphology

Dr. Fitzgerald answered dozens of requests for information from the public and reporters. In 2025, he was interviewed by news outlets on various topics ranging from endangered species to snakes to the problem of invasive species in Florida.

Two volunteers worked in the herp range in 2025. Their main tasks were working on daily tasks to care for the collections such as labeling and sorting. These undergraduate students are also engaged in independent research projects with Fitzgerald and his recently graduate PhD student Dr. Griffin Nicholson.

A significant portion of the use of data from the Collection of Amphibians and Reptiles was facilitated through our participation in global online databases such as the Global Biodiversity Information Facility (GBIF), the USA-based portal for vertebrate specimens VertNet. The Collection of Amphibians and Reptiles provides access to special-purpose images, such as CT scans that were accessed at Morphosource. For example, one of our specimens of the Chinese Alligator is accessed regularly by independent researchers. We also fulfilled ~20 requests to photograph and measure specimens for outside researchers. By providing this help, we reduce the risks of mailing and transporting irreplaceable specimens around the globe. Requests for photographs are an important and increasing use of research specimens. Specimen photographs that allow examination of species traits are especially valuable for researchers in foreign countries because it is difficult and risky to ship physical specimens overseas. A priority is to develop a better system for reporting these kinds of uses of the collection.

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Figure 4 - The Dunes Sagebrush Lizard has been studied for decades by TAMU herpetologists. Mickey Parker, Ph.D. student, is seen collecting data in the species' unique dune habitat in the Monahans Sandhills, near Monahans, TX. (Photos: Lee Fitzgerald)

Amphibians and Reptiles Projects 2025

Endemic Peninsular and Insular Reptiles in Baja California.

In association with Eco-Alianza de Loreto. Lee Fitzgerald

Ecotourism for Conservation? True or False for Costa Rican Amphibians and Reptiles.

Masters thesis research by Alberth Rojas Carranza, Fitzgerald PhD student.

Conservation Translocations of the imperiled Dunes Sagebrush Lizard.

PhD research by Mickey Parker, Fitzgerald PhD student. \$400,000, funding finished.

** Dr. Parker graduated in December 2025.

Reintroducing Species When Threats Still Exist: Repatriating the Endemic St. Croix Ground Lizard.

Ph.D. research by Nicole Stevens, Fitzgerald PhD student.

Frogs as Invasive Species: A Global Review and Experimental Focus on the Invasion of the American Bullfrog in the Southwest USA.

Ph.D. research by Griffin Nicholson, Fitzgerald PhD student.

** Dr. Nicholson graduated in December 2025.

Hybridization of Red-eared slider turtles with native species: Threats from the World's Most Common Turtle and Top 100 Worst Invasive Species.

Ph.D. research by Isis Davis, Fitzgerald PhD student. NSF Graduate Research Fellowship \$170,000 2024-2027. Ms. Davis' work is funded by numerous small grants she applied for and received through her own initiative. She is working in the molecular lab of Dr. Kira Delmore, Columbia University to complete genomics work on her samples of invasive red-eared sliders.

Collection of Birds

In 2025, the Collection of birds accepted 15 accessions of new material, adding 946 bird specimens to the collection. The total number of catalogued specimens in the collection is now 35,247. Taxonomically, the collection now represents 1,951 species, 866 genera, and 165 families. A total of 26 loans were made to researchers, educators and art curators in 2025. Domestic fieldwork was conducted at properties in East Texas - Lamar County (Temple Prairie) and Rusk County. International fieldwork was conducted in Cameroon and accounted for the addition of 26 species and eight genera that are new to our collection (Table 3).

Table 3 – New species and genera from the Cameroon expedition deposited at the Biodiversity Research and Teaching Collections 2025.

Family	Scientific name	Common Name
Cisticolidae - Cisticolas and Allies	<i>Camaroptera chloronota</i>	Olive-green Camaroptera
	<i>Cisticola anonymus</i>	Chattering Cisticola
	<i>Prinia bairdii</i>	Banded Prinia
	<i>Schistolais leucopogon</i> *	White-chinned Prinia
Estrildidae - Estrildid Finches	<i>Amandava subflava</i> *	Orange-breasted Waxbill
	<i>Clytospiza monteiri</i> *	Brown Twinspot
	<i>Mandingoa nitidula</i> *	Green-backed Twinspot
	<i>Nigrita canicapillus</i>	Grey-headed Nigrita
	<i>Spermophaga haematina</i>	Western Bluebill
Hirundinidae - Swallows	<i>Psaldoprocne nitens</i> *	Square-tailed Saw-wing
Malaconotidae - Bushshrikes	<i>Dryoscopus senegalensis</i>	Red-eyed Puffback
Muscicapidae - Old World Flycatchers	<i>Fraseria ocreata</i> *	Fraser's Forest Flycatcher
	<i>Muscicapa sethsmithi</i> *	Yellow-footed Flycatcher
Nectariniidae - Sunbirds	<i>Cinnyris minullus</i>	Tiny Sunbird
Nicatoridae - Nicator	<i>Nicator vireo</i>	Yellow-throated Nicator
Picidae - Woodpeckers	<i>Campethera cailliautii</i>	Little-spotted Woodpecker
	<i>Campethera caroli</i>	Brown-eared Woodpecker
Ploceidae - Weavers	<i>Euplectes macroura</i>	Yellow-mantled Widowbird
	<i>Ploceus nigerrimus</i>	Vieillot's Black Weaver
Pycnonotidae - Bulbuls	<i>Atimastillas flavicollis</i> *	Yellow-gorgeted Greenbul
	<i>Chlorocichla falkensteini</i>	Falkenstein's Greenbul
	<i>Chlorocichla simplex</i>	Simple Greenbul
	<i>Eurillas curvirostris</i>	Plain Greenbul
	<i>Eurillas gracilis</i>	Little Grey Greenbul
Ramphastidae - Toucans	<i>Gymnobucco bonapartei</i> *	Grey-throated Barbet
Turdidae - Thrushes	<i>Neocossyphus rufus</i>	Red-tailed Ant Thrush
* denotes new genus to our collections.		

Because of our continued role in the statewide Lights Out conservation initiative, the Collection of Birds again received large numbers of salvage specimens from all major metropolitan areas, including several rare specimen records for Texas (e.g., Lazuli Bunting). Samples from the Lights Out materials continue to be shared with researchers from the Schubot Center for Avian Health (TAMU Vet School), the University of Texas – San Antonio, and the Harris County Health Department. Our Lights Out, Texas! exhibition materials purchased in 2023 with funds from the Innovation X program at Texas A&M were repurposed alongside new additions from the Cameroonian collections in an exhibit at the Memorial Student Center at Texas A&M University. This installation “Lights, Glass, Action! The art of bird conservation from cityscapes to African savannas” ran from August 6 through November 21 and recruited sponsorship dollars from Texas Parks and Wildlife Foundation, The Horizon Foundation, HEB – Our Texas Our Future, Love – Titos Vodka, Rio Brazos Audubon, and Viracon Glass. The exhibit coincided with our hosting of the 4th annual statewide Lights Out partners meeting and collections open house with leadership from Dallas Zoo, Houston Zoo, Texan By Nature, Audubon Texas, Defenders of Wildlife, Texas Parks and Wildlife, Texas Conservation Alliance and others.



Figure 5 - Lights Out, Texas! Statewide partners meeting, symposium, research poster session and collections open house 2025.

We continue to maintain an active salvage network, with material being deposited by rehabilitation centers including the Friends of Texas Wildlife (Magnolia, TX), Amos Rehabilitation Keep (ARK – Port Aransas, TX), Gulf Coast Wildlife Rehab (Brazoria, TX), and Southlake Animal Hospital (Southlake, TX). This salvage network continues to provide the collection with specimens that we would not otherwise have access to, such as raptors and owls. Large sets of samples from salvage specimens have been put to use investigating chagas disease (owls), microplastics (rails), and other lines of inquiry. Twenty-six loans were made to various institutions including the American Museum of Natural History, Texas Tech University, and the Schubot Center for Avian Health. The Collection of Birds hosted several on-site research scientists working on topics covering behavior, plumage, systematics and disease ecology including Dr. Rauri Bowie from the University of California at Berkeley and Fulbright Scholar Dr. Taiye Aderniyi Adeyanju from Nigeria. Specimens were heavily utilized by Lights Out contingencies in Dallas, Fort Worth, and College Station – with specimens in the care of Texas Conservation Alliance (D/FW) displayed at 42 events engaging over 4,250 participants.

We continued to rotate specimens through the Forsyth Gallery on a monthly basis in support of their “[Treasures From The Vault](#)” section, wherein rare artifacts are displayed. Numerous specimens from the research collection were used to support the teaching of ECCB 402 (Ornithology) and ECCB 302 (Diversity and Evolution of the Vertebrates) labs. In 2025, the Collection of Birds participated in

hosting a large group from the College of Agriculture Development council and statewide visitors from the Texas Master Naturalist state meeting.

The Collection of Birds continues to see a strong interest from a diverse group of students and community volunteers willing to assist with specimen preparation and curation on a weekly basis; and as of 2022, undergraduates had the opportunity to earn credit for their role in specimen preparation and curation duties. In 2025 our volunteer group included seven undergraduates, three graduate students, and three community volunteers. Utilizing extramural funding, we supported two undergraduate student specimen preparators and one data entry specialist.

Birds 2025 Projects

Avian Malaria

Voelker's lab is investigating the distribution and prevalence of avian malaria. A recent paper, dealing with parasite-abundance relationships across biogeographic regions was published in *Journal of Biogeography* in 2025, as were two malaria papers focused on *Phylloscopus* warblers in Europe (*Journal of Ornithology*) and an avian community in Vietnam (*Diversity*). Voelker's new EEB Ph.D. student Uthpala Jayaweera will be conducting malaria research on the avian community in Sri Lanka; her first field season is in progress.

Lights Out Texas

In late 2020, the BRTC engaged with a group to promote a statewide effort to promote dark buildings during peak bird migration. The twofold approach includes educating business owners and city managers about the importance of keeping their buildings and cities dark during peak migration and engaging with volunteers at the local level to conduct surveys. Casualties that are found on survey routes become specimens at the BRTC. In 2024, a consortium sent a letter to our University president requesting action on campus in terms of preventing bird strikes. In 2025, the first retrofit of bird collision deterrent markers was installed on the AgriLife Center building and new bird-friendly design standards (architecture, lighting and landscaping) are being drafted for incorporation into our campus master plan. In 2025, the BRTC entered into a 3-year contract with funding from the Texas A&M Chief Operating Officers office to continue collision monitoring, advocacy and guidance for implementing bird-friendly measures. Several students presented posters about their role in Lights Out, Texas! at the Texas Conservation Symposium in 2025.

Microbiomes

With Dr. Sergei Drovetski (USGS), we are assessing microbiome variation in Bobwhite and Scaled Quail, Northern Mockingbirds, Golden-fronted Woodpeckers and Northern Cardinals. Specimens are collected in "clean sites" versus sites in heavy cotton production regions. We are assessing the taxonomic profiles of the microbiome, as well as the virulome, resistome and functional gene expression. This is accomplished through high throughput sequencing of the metagenome, transcriptome, and metabolome. This project is also the basis for the dissertation of a Ph.D. student in Voelker's lab. We currently have two papers in review, and are finishing two others for submission.

Phylogeography and systematics of Eurasian birds

Voelker's lab is working in collaboration with Dr. Sergei Drovetski (USGS) and Italian Colleagues Drs. Marco Pavia, Irene Pellegrino and Giovanni Boano (University of Torino, University of Piemonte Orientale, and Natural History Museum of Carmagnola, respectively) on the phylogeography and systematics of selected bird species, for which they have extensive samples from Europe and Russia. Material from our recent expeditions to Sardinia and Sicily have provided new comparative material that will 1) allow us to assess the validity of described subspecies, and 2) provide additional localities for our ongoing assessments of biogeographic patterns and lineage diversification in birds distributed across known glacial refugia. Several papers have been published over the past few years, with the most recent being published in the *Journal of Zoological Systematics and Evolutionary Research* this year.

Phylogeography of African arid-lands birds

With colleagues at UC-Berkley and Oklahoma State University, Voelker is investigating how genetic variation (if present) in a suite of bird species is distributed across southern African arid-lands, in the context of geography and historical climate change patterns. This work was initiated as part of an NSF funded collaborative project, and further collaborative funding is being sought. In addition to research products, this project has also generated over 1,800 specimens for the BRTC. This collaboration has produced a series of papers over the past five years, several papers are either in review or various stages of preparation, and the most recently published appeared in *Integrative Zoology* this year.

BRTC Bird Banding Station

In 2025, the BRTC banding station (K. Andringa, EEB PhD Candidate) captured a total of 125 birds from Oct 1 to December 16, with 90 of them being new bands and 35 being recaptures from this or previous seasons. We had 15 banding sessions, totaling approximately 90 station hours. Because we have eight nets, we had a total of 720 net hours this season. That amounts to 0.17 birds captured per net hour and 1.4 birds caught per hour of the station being open.

For new bands, we set out 90 bands for 21 species, with Myrtle Warbler (our subspecies of yellow-rump) being the most commonly banded species with 13 being banded this season, followed by Ruby-crowned Kinglet and White-throated Sparrow with 11, Carolina Wren with 10, and Northern Cardinal with nine. Notable birds for the station include Bewick's Wren (the second for the site and first in-hand for Keith), Chipping Sparrow (first in five years), and Red-tailed Hawk (unbanded).

For the 35 recaptures, four were foreign recaps— birds not banded on my permits. Two of these were Carolina Chickadees and one was a Carolina Wren banded by Tabitha Olsen last winter. We also captured an old Northern Cardinal banded by Sarah Hamer in February of 2019 as an AHY bird. That makes it at least six years and 10 months old at the time of capture. Other notable recaptures were Ruby-crowned Kinglets banded by Andringa in previous years, including two that were banded in November 2024, one in March 2025, and one from November 2023.

Collection of Mammals

The Collection of Mammals added a small number of specimens (seven) to the collection in 2025 bringing the total number of specimens to 68,850, representing 994 species, 424 genera, 94 families, and 22 orders. Notable specimens accessioned included two black bears from the Trans-Pecos region of Texas, including one cub that was CT scanned with data pending on Morphosource.

In addition to the cataloged specimens in 2025, a considerable amount of effort was put into digitizing the backlog of specimens that have lingered in the collections since the time of the flood in the mid 1990s. Data from 234 fluid-preserved, 1,004 skeletal preparations, and 188 skin and skeletal preparations were entered. These specimen data will be appended with information residing in paper catalogs archived at the BRTC. Once complete, the specimens will be able to be cataloged and integrated into the collection.

The Mammal Division filled nine loans to various academic researchers and institutions nationally and internationally. Loans were made throughout the USA including the The Field Museum, Tarleton State, and Texas A&M University Kingsville (among others), and internationally to Columbia and Mexico. Numerous specimens from the research collection were used to support teaching ECCB 401 (General Mammalogy). Visitors to the collection were primarily from Texas institutions to examine specimens for imaging and measuring. In addition to physical loans and visitors, six loans of CT datasets of specimens from the Collection of Mammals were loaned to various institutions for a variety of research and teaching purposes. Data from the Collection of Mammals are easily discoverable on several web portals including VertNet, iDigBio, and GBiF.

We participated in hosting the College of Agriculture Development Council tour (72 people) in September and visitors from the statewide meeting of the Texas Master Naturalist organization (45 people) in October. Both groups contained important members that we plan to continue engaging with in terms of recruiting support and funding.

In 2025, with funding from our account with the Texas A&M Foundation, we employed a recently graduated Master's student to overhaul the teaching collection of mammals, creating a system to effectively and safely store research collection specimens alongside teaching collection specimens. This reorganization has made a positive impact on the ability of our teaching assistants to efficiently manage their lab times.

We established a regular specimen preparation day, and recruited students and community volunteers to help process accessioned material from the Hamer lab group and others. We collaborated with Dr. Steven Webb (RWFN/NRI) to accession and prepare a large number of javelina heads for our beetle colony. Once clean, these specimens will continue to aid his research program and be available for others to utilize.



Figure 6 - Javelina processing day with volunteers from ECCB, RWFM, and EEB.

During 2025, the Collection of Mammals oversaw five undergraduate student volunteers, one graduate student volunteer, and two community volunteers. Undergraduate students were concurrently enrolled in Directed Studies (ECCB 485) and contributed to ongoing curatorial care of the collections, digitization of data, digitization of paper catalogs, and specimen preparation. As in the past years, ECCB 401 (General Mammalogy) students helped with pest management, examining all dry specimens for insect infestation during fall and spring semesters.

Mammals 2025 Projects

*Morphological and genomic diversity in the North American deer mouse (*Peromyscus maniculatus*) across its geographic range*

With funding from the National Science Foundation, Dr. Light is using genomic data and 3D geometric morphometric data (taken primarily from fluid-preserved specimens) to explore diversity of putative species within *P. maniculatus* throughout its entire geographic range. Specimens from the BRTC, in addition to other specimens from natural history collections, have been instrumental in this work. Recently graduated PhD student Natalie Hamilton is leading the genomic work and MS students Brandy Craft, Haley Ellis, and Grace Martindale are tackling the morphology side of the project. All three MS students are expected to graduate in the next year. We expect to publish several papers related to this research in 2026. In 2025, we collaborated with eight undergraduate researchers) working on this project: (K. Steakley, A. Torres, G. Rodriguez, L. Bartlett, A. Lerro, A. Garcia, A. Engel, M. Bergeron).

Systematics and Selection in Sucking Lice

Dr. Light and several of her collaborators outside of Texas A&M are funded by the National Science Foundation to explore relationships and selection of sucking lice that parasitize mammals. PhD student Ali Lira continued working on this project in 2025, examining mammal specimens for lice and exploring morphology and spatial distributions across all 15 families and approximately 600 species of sucking lice.

RANGES: Building Capacity to Extend Mammal Specimens from Western North America

Dr. Light is part of a National Science Foundation funded Thematic Collections Network initiative across over 20 natural history collections. For this project, each collection is digitizing important trait and ecological data from western North American mammal specimens. We started documenting these data during the summer of 2023, with a PhD student and technician Emily Coyote. Emily continued working on the project until the summer of 2025. During 2025, Emily continued her efforts digitizing specimen data and training and working with two undergraduate students (A. Johnston, and P. Solis).

*Distribution of Nelson's pocket mouse (*Chaetodipus nelsoni*) in Texas*

With previous funding from Texas Parks and Wildlife and Texas EcoLabs, Dr. Light has explored the species limits and distribution of the *Chaetodipus nelsoni* species group in southwest Texas, specifically the recently described *C. collis* (Neiswenter et al. 2019). Although a specimen of *C. collis* from Webb County is housed in the Biodiversity Research and Teaching Collections, newly collected data (field work and ecological niche modeling; data collected by past PhD students Adrian Castellanos, Leilia Siciliano-Martina, Lacie LaMonica, and past undergraduate students S. Ardry, E. Dohnalik, S. Fowler, R. Martinez, and G. Vielleux) support that the species may not reside southwestern Texas. This work was published in 2025 (Light et al. 2025. *Journal of Mammalogy*) and it addressed the distribution of the pocket mouse in Texas as well as determining geographic limitations of the other two species within the *C. nelsoni* species group. This manuscript also involved a PhD student in Dr. Daniel Spalink's lab (Lydia Morley) who examined niche occupancy of each species.

Documenting small mammal diversity at the BRTC

Dr. Light and her mammalogy class trap at the collections and locally every semester documenting small mammal diversity while keeping an out for ticks and notable pathologies (including the *Brazospox* virus) for collaborative research projects with Sarah Hamer's laboratory (VIBS).

Population genetics and phylogeography of pocket gophers and their chewing lice

The Light lab continues to investigate relationships among pocket gophers and their parasitic lice (at the population level as well as across large geographic distributions). Current work is focused on finalizing a phylogeographic assessment of *Geomys breviceps* and pursuing pocket gopher and chewing louse population genetics. PhD student Ayomiposi Abraham, technician Danielle Dillard, and undergraduate students Katelyn Bartlett and D. Woosam are exploring the relationships and phylogeographic patterns of chewing lice parasitizing *Geomys* pocket gophers in Texas and across the geographic range of the genus. This work is funded by Texas Ecolab and involves collecting specimens in the field as well as brushing voucher species in the BRTC and other collections.

Porcupine range expansion

Using specimens from natural history collections (including the BRTC) and observations from community scientists, Lydia Morley and Katie Sanbonmatsu (both PhD students in Dr. Daniel Spalink's lab) as well as Dr. Light, Curator Heather Prestridge, and technician Danielle Dillard are exploring possible range expansions of porcupines (*Erethizon dorsatum*) across North America. We are currently collaborating with to develop ecological niche models of this species and will submit this work for publication in 2026.

Bat Population Genetics and Disease

In 2025, 2 manuscripts were submitted examining pigmentation and population dynamics of the Townsend's big-eared bat, (*Corynorhinus townsendii*) from California. Tissue samples used in these studies are housed at the BRTC. Both manuscripts have been accepted for publication in early 2026 (Hamilton et al. in press)

Tick and Parasite Associations

PhD Student Oluwaseun Ajileye is exploring the associations between ticks and their parasites and pathogens (particularly filarial worms) as part of his dissertation research. He is using specimens in the BRTC and other natural history collections to obtain tick samples for his research. One manuscript resulting from Oluwaseun's work was published in 2025 (Ajileye et al. 2025) and several other manuscripts were submitted and prepared for publication.

Student Engagement and Mentoring

Teaching Use

The BRTC continues to be heavily used by undergraduate courses offered by the Department of Ecology and Conservation Biology. While labs are provided with collections of specimens dedicated to teaching, specimens from the research collections are also often utilized for rare species.

Laboratory courses taught at the BRTC in 2025 included:

ECCB 401- Mammalogy (Fall and Spring – 50 students per semester; Light)

ECCB 402- Ornithology (Spring – 45 students; Voelker)

ECCB 315- Herpetology (Spring – 60 students; Fitzgerald)

ECCB 316 – Field Herpetology (Spring – 25 students; Hibbitts)

ECCB 311- Ichthyology (Fall – 29 students; Conway)

ECCB 302- Diversity and Evolution of the Vertebrates (Fall and Spring – 110 students per semester; Conway/Fitzgerald/Voelker)

ECCB 314/614 – Biology of Gulf Coast Fishes (Summer – 15 students; Conway)



Figure 7 - Students participating in ECCB 314/614 Biology of Gulf Coast Fishes, a summer field course taught by Dr. Conway that trains students in both field and museum techniques.

Graduate Student Advising

Graduate students directly engaged in BRTC Research and Teaching with a BRTC Curator as their advisor.

Ayomiposi Abraham (PhD; Light)

Oluwaseun David Ajileye (PhD; Light)

Wesley Arend (MSc; Conway)

Carolina Bertoul (PhD; Voelker)

Alberth Rojas Carranza (PhD; Fitzgerald)

Brandy Craft (MSc; Light)

Isis Davis (PhD; Fitzgerald/Delmore-TAMU

Dept. of Biology)

Haley Ellis (MSc; Light)

Darcae Holmes (MSc; Conway)

Tiffany Inbody (PhD; Conway)

Katrina Keith (PhD; Voelker)

Grace Martindale (MSc; Light)

E. Griffin Nicholson (PhD; Fitzgerald)

Mickey Parker (PhD; Fitzgerald)

Nicole Stevens (PhD; Fitzgerald)

Ryan Weesner (PhD; Voelker)

Student Workers

Utilizing funds from the Department of Ecology and Conservation Biology, the BRTC was able to employ one undergraduate student on a part-time basis during 2025. Marianna Stasney was tasked

with managing the beetle colony, skeletonization and preparation of specimens, fumigation and reinstallation of research specimens used in ECCB -ology courses. Several additional student workers were employed under extramural funding in 2025 including Skyler Nix, Hannah Brethorst, Sabri Amrani-Khaldi (Prestridge/Voelker - Collection of Birds). Sabri Amrani-Khaldi, Allison Reimer, Jack Erickson, and Matthew Free (Collection of Fishes). We also employed former student Kendall Walton, MSc in summer of 2025 to overhaul the teaching collection of mammals.

Internships

Internships (ECCB 485/285) were offered in all divisions in 2025. Each intern had their own specific project that matched their interest in the collections and included Student Interns Callie Welty and Kadyn Moore (Prestridge – Mammals) along with Directed Studies students Brisa Vargas and Sabri Amrani-Khaldi (Prestridge - Birds)

Community Engagement

Support of Community Science

In 2025, the training class for the Brazos Valley Texas Master Naturalist (TMN) chapter continued exclusively utilizing the BRTC as their location for new member training. This organization is sponsored by Texas Agrilife Extension and has been advised by Prestridge since the chapters beginning in 2005. In serving as chapter advisor, Prestridge coordinates their use of the BRTC and hosts the introductory session for each training class. The BRTC provides a unique opportunity for this group because the trainees and members have access to specimens to learn from. Trainees from the class are also exposed to the value of natural history collections and offered volunteer opportunities to engage with the BRTC outside of their training hours. We also routinely supported k-12 education through loaning of educational kits of specimens.

In October of 2025, the BRTC Curators and Collections Managers hosted visitors from the statewide Texas Master Naturalist meeting at the collections (Figure 8).



Figure 8 - Faculty curators Conway, Light and Voelker engaging visitors from the Texas Master Naturalist statewide meeting 2025.

Community Outreach

The BRTC participated in the annual Darwin Day event hosted by the Ecology and Evolutionary Biology program at Texas A&M University (Figure 9). Prestridge donated her time to serve on the planning committee and coordinated a table for BRTC specimens from across the collections hosted by BRTC student volunteers. This popular event drew nearly 1,800 people in the short three-hour time frame and was hosted at The Gardens on west campus.



Figure 9 - BRTC booth with volunteers, specimens and participants 2025.

Community Volunteers

Community volunteers including members of the Texas Master Naturalist (TMN) chapter and former students contributed time in several areas of the collections in 2025. TMN volunteers continued to maintain and improve the native pollinator garden and outdoor classroom area, with monthly workdays on the first Friday of each month. In addition to the TMN workdays, Squadron 6 of the Texas A&M Corps of Cadets volunteered with major projects in the garden several times (Figure 10). Within the collections, several community volunteers continued to serve not only as volunteers, but mentors to students.



Figure 10 - Texas Master Naturalist volunteers (left) and Corps of Cadets Squadron 6 (right) at the BRTC gardens workday in 2025.

Public Expositions

In 2025, specimens from the Collection of Birds were utilized for public expositions at local museums, galleries, and schools. The Lights Out, Texas! materials were reimagined for, Lights Out, Texas! The art of bird conservation from cityscapes to African savannahs in August of 2025 including artwork, specimens, and messaging about the important conservation initiative, bird safe glass samples, and details about recent research expeditions to Cameroon Africa and how both facets benefit the collections at the BRTC. (Figure 11).

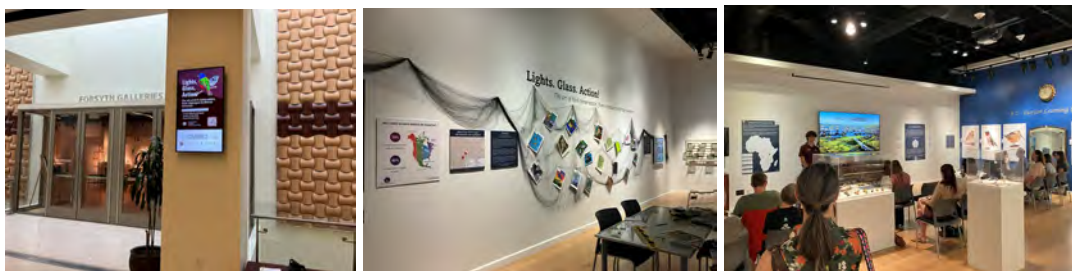


Figure 11 -Lights Out, Texas! exhibition reenvisioned as Lights, Glass, Action. The art of bird conservation from Cityscapes to African Savannahs at the Runyon Learning Gallery, Forsyth Gallery, Memorial Student Center, Texas A&M University.

BRTC Operations

Funding

In FY 26, the BRTC received \$6,000 from the Department of Ecology and Conservation Biology for general support, \$3,000 for support of labs that meet at the BRTC, and additional departmental support to employ an undergraduate student worker (\$12/hr 10 hours per week).

In summer of 2025, the University funded infrastructure improvements for the BRTC were completed totaling \$185,000 with Prestridge serving as the lead contact for coordination of work. The scope of the renovations included addressing security of our research collections through the addition of walls/lockable doors to divide the research collections from teaching and general use space, lowering and zoning lighting, adding additional restroom facilities, adding electrical outlets to workstations and classrooms, providing upgrades to vent hood fan and the addition of oversized doors leading to our dock area (Figures 12-14).



Figure 12 - Lowering of overhead lighting and installation of security doors leading to the bird and mammal range.



Figure 13 - Construction of new walls and security doors to define learning lab and wet collections workspace.



Figure 14 - Addition of restroom and water fountain facilities.

At the completion of construction in 2025, the Department of Ecology and Conservation Biology supported a request for finishing touches to the space totaling \$10,205.60 that included the purchase of lab tables, furniture, signage and storage cabinets. These additions supported the significant professionalization of our space.

Curator Authored Peer Reviewed Journal Articles 2025

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Dye, K.R., A.T. Fields, M.G. Bean, S.M. Robertson, C.M. Hollenbeck, **K.W. Conway**, and D.S. Portnoy. 2025. Assessment of genomic diversity within and between two cryptic shiners, *Notropis megalops* and *N. amabilis*. *Journal of Fish Biology* 106:836-845.

Griffin, N.E., A. Rojas Carranza, **L.A. Fitzgerald**. 2025 Conspecific oophagy by tadpoles: conditions for its occurrence and importance as a source of anuran egg mortality. *Journal of Herpetology* 59 (3) 1-12.

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