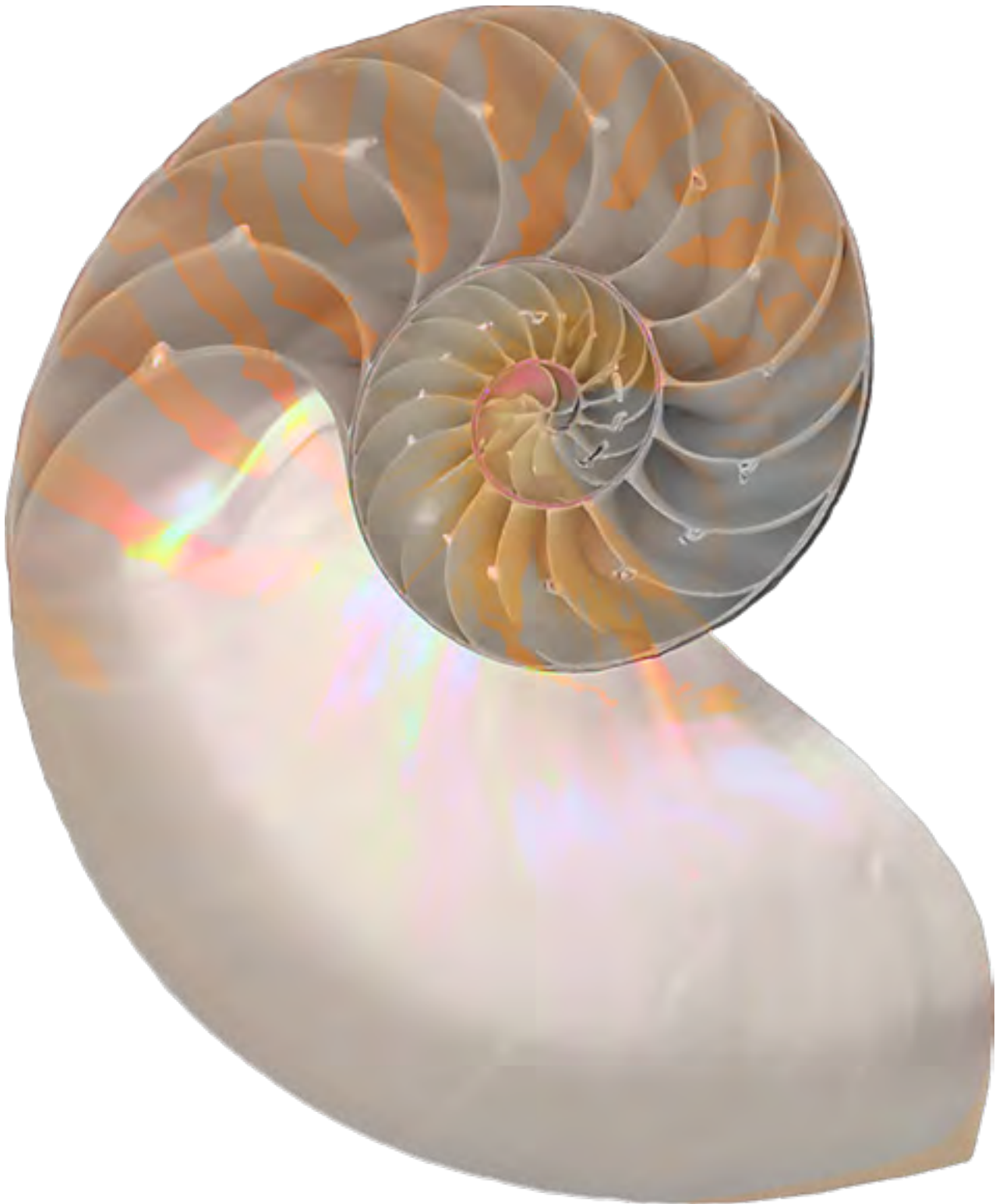




Issue # 3

COLLECTIONS

2023 Report of the University of Wisconsin–Madison Zoological Museum

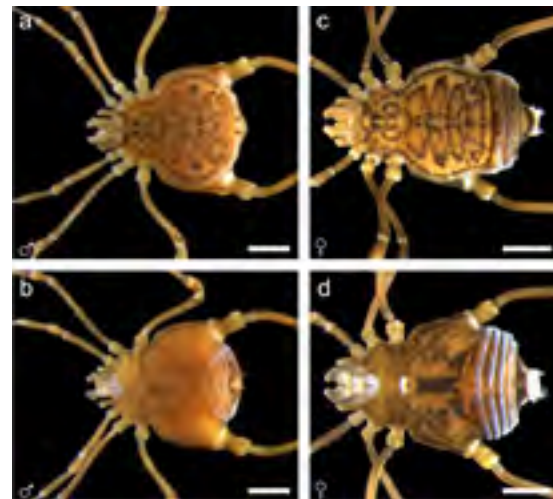


Forward from Prashant Sharma, UWZM Director



It has been an exciting and productive year for our research and teaching efforts in the Museum and I am delighted to share some of our progress in the past year! On the invertebrate side of research, our major undertaking in 2023 was to produce the first phylogeny of camel spiders (Solifugae), a group of arid-adapted

with the goal of using arthropod collections to teach principles of phylogeny and comparative biology to over 500 students. In tandem with our long-running museum studies program, developed and taught by Associate Director Laura Monahan, these efforts are part of our initiative to increase the utility of the Zoology Museum's collections to our undergraduate student body. We also built upon a long-standing interaction with neighboring natural history collections, with our invertebrate evolution students visiting the Field Museum of Natural History in Chicago in May 2023. Students received a behind-the-scenes tour of the collections from new Assistant Curator of Insects, Dr. Bruno de Madeiros, as well as Dr. Tauana Cunha, a postdoctoral scientist working on the evolution of gastropod mollusks. Joining us for a look at the vertebrate collections was Dr. Greg Mayer, affiliate of our Museum and faculty at UW-Parkside.



Paktongius suzukii sp. nov.

Recent events in Israel have compelled a moratorium on new collecting campaigns. We hope for peace in the region and continue to work with Israeli collaborators of different backgrounds and faiths toward the goal of advancing scientific inquiry. In the meantime, we are turning our attention to additional regions of the world to enrich our collections. As part of these efforts, we have supported field collection of invertebrates in Argentina and Texas this past year.

I look forward to another productive year full of discoveries and growth of our collections. This year, I hope to focus on building the Museum's capacity for new types of sequencing-based investigations, as well as equipping students who are making use of the collections to train in genomic techniques that can further unlock the potential of our vaults.

Associate Professor Prashant Sharma received the 2023 UW-Madison Distinguished Teaching Award.

arachnids notorious for their running speed and aggression. Due to taxonomic neglect, there has been no assessment of internal relationships of this group. In 2023, a multinational collaboration of eight laboratories around the world, led by our postdoctoral scientist **Dr. Siddharth Kulkarni**, leveraged natural history collections from several museums (including our previous collections in the Middle East) to complete the first family-level tree of camel spiders and infer their biogeographic history. These works resulted in the naming of two new suborders and three new families of poorly studied arachnids! In addition, we published the discovery of ten new arachnid species this past year, including six blind cave spiders from Israel.

I am always overjoyed to share the progress of our students and celebrate their successes. This past year, we bid a bittersweet farewell to **Emily Setton** and **Guilherme Gainett**, who started postdoctoral training at Cornell University and Harvard Medical School, respectively. Emily and Guilherme had made major contributions to sea spider and arachnid phylogeny, as well as comparative development of neglected arthropod groups. Siddharth was awarded the prestigious Ramanujan Fellowship from the central government of India to start his own research group in his home country. Our junior students, **Kaitlyn Abshire** and **Benjamin Klementz**, are proving no less illustrious. Kaitlyn won the 2023 Constance Boone Award for her presentation at the American Malacological Society meeting in Tuscaloosa for her work on terrestrial snail development, whereas Ben won the best student presentation prize at the International Congress of Arachnology in Montevideo, Uruguay.

I am excited to renew the Museum's commitment to our education mission at UW-Madison. This year, we continued to administer laboratory exercises developed for introductory biology (Intro Bio 152), which brings specimens of scorpions, horseshoe crabs, centipedes, mantis shrimp, velvet worms, and more into classrooms,

Excellence!

UW–Zoological Museum Associate Director and Curator of Osteology Laura Monahan was a recipient of the 2023 Board of Regents Academic Staff Excellence Award given by the University of Wisconsin System. The award recognizes exceptional university service and is the UW System’s highest recognition bestowed upon members of its academic staff. Laura has served as the defacto staff director of the UW Zoological Museum for the past 16 years, during which time the Museum has flourished, expanding its ability to preserve and facilitate study of vertebrate and invertebrate fauna. Through her administration



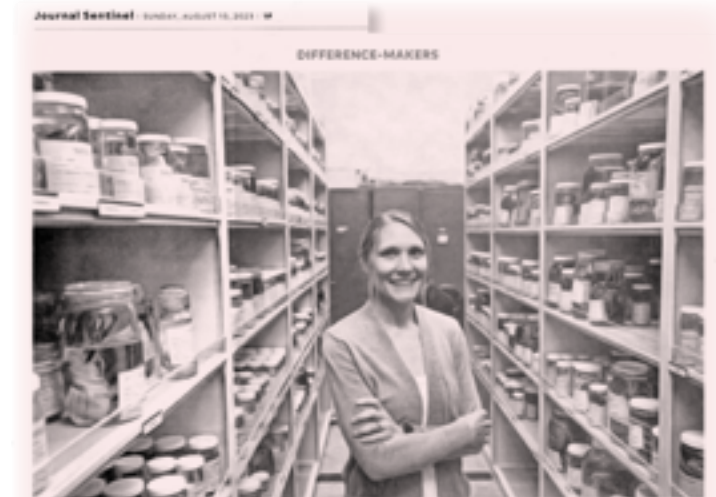
UW-Madison's Zoological Museum boasts amazing teaching tools



Jane Whelan, associate director of the Zoological Museum and curator of ornithology, opens a container which holds feathers, finding one grays heron.

Laura's fame generated awareness of the UWZM through several newspaper exclusives in the Wisconsin Capital Times and the Milwaukee Sentinel.

and supervision of the museum, including budgeting and fundraising, the Museum has obtained extramural funding to support regular operations and upgrade spaces and Museum storage to further enhance the collections and their usability in research and teaching. In addition, Laura has encouraged and created collaborative relationships with local, state, and federal agencies; formalized positions for adjunct curatorial and collection volunteers; strengthened the internship program and developed new instructional opportunities offered by the Museum.



Levi Weinstein, associate director and curator of ornithology for the University of Missouri Botanical Garden, Missouri Botanical Garden, received an Academic Staff Excellence Award for her extraordinary work for the museum. www.missouri.edu/academicstaff

MONAHAN 'AT THE HEART OF IT ALL'

Associate director and curator of osteology
for UW-Madison Zoological Museum honored



William T.
William T. is
a student.

As the museum director and curator of zoology — human and nonhuman — for the University of Wisconsin-Madison Zoological Museum, the manager outreach programs, exhibitions, special collections, internships, loans, events, skeleton collections, grant writing and fundraising.

Monahan has worked at the university for 17 years. In recognition of her hard work and dedication, UABhas named her to a 2010 Academic Staff Excellence award. Recipients are chosen based on their exceptional service and contributions to the university.

"That's the case in the heart — of the economy," said Jacob Mincer, a research associate and economist scholar. "It only functions because [Mishkin] gets in to many hours."

Following the outbreak of the 1968-69 influenza season, the World Health Organization (WHO) was created to coordinate the response to the pandemic. It has since been a major force in the development of influenza vaccines and in the surveillance of influenza activity worldwide.

developed animals from Wisconsin, the Midwest, and other parts of the western Canadian subarctic specimens and their morphological diversity. This helps to researchers track how species change over time.

The museum currently houses 70,000 specimens of birds, mammals, reptiles, amphibians and fish. It is a state and federal repository for endangered species. Some of the animals are extinct. For example, the museum houses a white-bear cub from a giant

The collection also includes Book 12, written from the indigenous viewpoint that was famously studied by Chavkin.

Enhan

tionally, special shakers have been purchased to significantly increase the amount of storage space. Research is essential about

2003 new specimens are added to the collection every year, and the country has many new varieties. However, stopped (bushings) of, he has told that we're not getting space in this building," said he.

biological museum has three staff members and relies on volunteers, interns and students. The team identifies, processes, catalogs and mounts specimens from start to finish, but it

The **University** **South** **identifies** **citizens** **processes**, Darwin, in the classroom, UW biology students could attend Darwin and natural selection in introductory textbooks. In the lab, they can examine Darwin's finches firsthand.

Ecological museum
Historically underfunded

to power current safety standards. The program also has used the incentive to purchase modern, powder-coated



operating behind the scenes.

According to Minicucci, the increase in an estimate of Minicucci often puts in long hours weekends, but Minicucci that she loves the work, that

part in spreading behind the scenes. "Word-of-mouth is probably going to put 15 to 20% of these new displays" implanted throughout. "In the stores, there's 80% of what ... That's really what I love."

She also admits collecting

London holds a 13,000-year-old giant beaver skull during the tour of the British Geological Museum. (COURTESY BRITISH GEOLOGICAL MUSEUM, LONDON)

here. "It's that team working together that really makes a museum with many specimens and live staff actually function."

Operating behind the scenes

Welcome, John Stuhler

We are pleased to introduce John Stuhler, new Curator of Mammals and Birds at the UW Zoological Museum! John is returning to Wisconsin after pursuing a PhD at Texas Tech University. For his dissertation, John worked with the Texas kangaroo rat (*Dipodomys elator*), a species of conservation interest, while also researching diversity patterns in rodent communities. In particular, he combined data from field surveys and museum specimen records to investigate how biodiversity is changing over time. John also worked in the Natural Science Research Laboratory at the Museum of Texas Tech and gained experience using collections for research, teaching, and outreach. At the UWZM, John is excited about growing and using the collections for teaching and outreach, while also researching species distributions across Wisconsin and the Midwest, as well as species' adaptations to environmental change.



Texas Kangaroo Rat



UWZM Ord's Kangaroo Rat

Meet Kaitlyn Abshire

Kaitlyn Abshire is a graduate student of Dr. Prashant Sharma, the UWZM's Faculty Director, and she is an intern at the Museum. Her topic of research focuses on establishing new tools for study of developmental biology in the common garden snail *Cornu aspersum*. She focuses on land snail evolution and development, especially adaptations for life on land and the evolution of gastropod head appendages.

Kaitlyn attended the meeting of the American Malacology Society, 1-5 August 2023, at Tuscaloosa, Alabama. There she won the prestigious Constance Boone Award for Best Student Presentation, which featured her work on the developmental biology of land snails.

Currently Kaitlyn is identifying and inventorying the Museum's David A. Baerreis snail collection and the Eastward Cruise invertebrate collection.



Kaitlyn and a UWZM drawer of seashells



The Museum Store gets a Makeover

It only took two years but the Museum Store has finally arrived in the 21st century. We now have a shopping basket system, the on line shipper XPF Descartes for calculating postage and printing in-house shipping labels, and a store dashboard that allows us to place new posters on the site ourselves and have them instantly available to website visitors.

Along with our best-sellers *The Fishes of Wisconsin*, *The Mussels and Clams of Wisconsin*, and *The Bats of Wisconsin*, we added the new *Wading Birds* to our bird posters, and finally offer the series *Skulls of Wisconsin Carnivores*, three years in the making, edited by Dr. Bill Reeder. Enjoy browsing through the site, and let us know if there's a special Museum-themed poster you'd like to see added!



The UWZM store is found here:
[HTTPS://charge.wisc.edu/zoology/items](https://charge.wisc.edu/zoology/items)



Blaschka Glass Models in the Works

The University of Wisconsin–Madison Zoological Museum (UWZM) was established at the very first UW Board of Regents meeting in 1848 and resided in Science Hall until it was destroyed by fire in 1884. Four years later Edward A. Birge (then Professor of Zoology and Assistant Curator of the Museum cabinet) started purchasing specimens to replace those lost in the fire. On his shopping list was a collection of glass invertebrate models created by German glassblowers Leopold and Rudolph Blaschka. The UWZM Blaschka models were originally used for teaching, but are now considered works of art that cannot be exhibited and handled due to their delicate construction and weakened condition. Although thousands of models were sold to Universities and Museums all over the world, only about 60 institutions have models today.

The UWZM has about 50 models and over the past 10 years, Museum staff have collaborated with **Tracy Drier**, Master Scientific Glassblower and **Ilia Guzei**, Director of the Crystallography, both in the UW–Madison Department of Chemistry, to document the collection.

175th Anniversary funding supported Tracy's brother Tim Drier, a professional glassblower with 40 years of experience, to work at UW–Madison developing glassblowing techniques and materials used by the Blaschkas. Tim and Tracy decided to create glass models of recently discovered thermal vent invertebrates—animals especially difficult to study in their environment and cannot be collected because the pressure differential would destroy them. Working in the Blaschkas' footsteps, Tim and Tracy worked to make models of the “uncollected” for use in labs today.

Blaschka Project Funding 2013-2023

2013 • This \$5000 Brittingham Trust Proposal, “Conservation for Historic Blaschka Glass Animal Models at the University of Wisconsin” allowed us to host a glass conservator from the Corning Museum of Glass who visited the collection, conducted an assessment and provided recommendations regarding the preservation of our Blaschka collection. This funding also allowed us to purchase a new preservation quality cabinet to store the models.

2018 • A \$13,000 Brittingham Trust Proposal, “Recreation of the Historic Blaschka Glass Invertebrate Models at the University of Wisconsin” financed collaboration with the Corning glass laboratory. We sent them five small samples of glass that could not be attributed to any specific models. Corning tested the glass and provided a detailed recipe of its chemical components. With that, we found a glass maker who produced glass with a similar Blaschka chemical composition. Tracy Drier and others then worked on making models with this newly developed glass, also using modern glass with a similar composition

and historic properties. They developed several prototypes, and were able to refine some of the tools and methodologies that were likely employed by the Blaschkas.

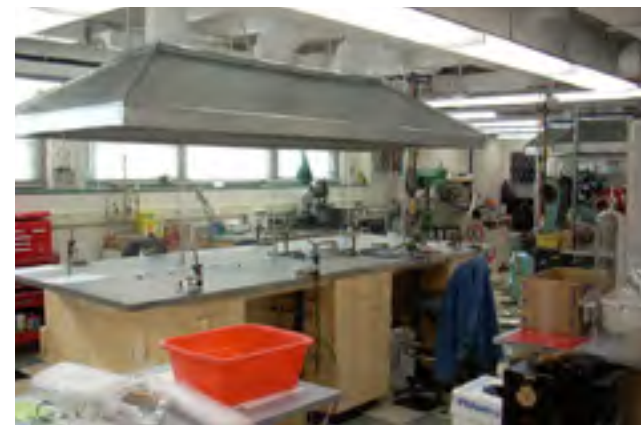
2023 • UW–175th Anniversary Grant provided funds to refine techniques and get a better understanding of the materials through work by Tim Drier, Master Scientific Glass Blower. Tim worked with brother Tracy Drier to recreate Blaschka glass models and also fabricate models of recently discovered deep sea creatures. These animals would have been unknown to the Blaschkas, and do not currently exist in the UW–Zoological Museum collection.

2024 • A Brittingham Trust Proposal, “Preservation and reproduction of Blaschka glass models” provides \$8,000 to encourage collaboration with other institutions that hold Blaschka collections. Researchers from UW–Madison will visit multiple collections to discuss storage, preservation, restoration, photography and documentation issues.



We are currently making a new web-page featuring the UWZM Blaschka collection and our new models.

Stay tuned!



Main working island in the Glass Shop at the Department of Chemistry. The shop provides glassblowing services for chemistry faculty, students, and staff.



The Drier brothers, Tim (above) and Tracy.



Giant Tube Worms
Scale models in prep. (Actual tube worms are 8 feet long.)



Upper left, Deep Rift Sponge; upper right, Sea Angel; left, Sea Pig.



Beroe punctata
Original Blaschka model and new reconstruction.



Transformations



As part of a Museum-wide initiative that started two years ago in the collection spaces, the lighting in the teaching laboratory was recently upgraded. The new LED lights are brighter, inset in the ceiling, dimmable and most importantly they do not emit heat and damaging UV rays the way that the old florescent bulbs did.

Lab lights October 4, 2023.

Lab lights January 4, 2024.



Prep Lab gets a big makeover



Nearly 175 years of collecting has resulted in some noteworthy collections at the University of Wisconsin Zoological Museum. To continue to be used now and for future teaching and research, regular additions to the Museum collection are required. Therefore, the Museum acquires approximate 1,000-2,000 specimens per year, nearly all of which require some type of preparation, many of which are derived from research activities of UW faculty and students, as well as state and federal (USFWS) agencies. The Museum's critical ongoing role as depository for these important research voucher specimens cannot be overstated. Depending upon the necessary type of preparation (often dictated by the class of animal) the specimens are prepared in various ways (as skins, skeletons or fluid preserved specimens) and are added to the various collections within the Museum. In addition, the UWZM has recently established a frozen tissues collection that requires tissues be extracted and preserved from every specimen that is prepared at the Museum. Protocols and procedures for the preparation laboratory have been approved

and meet or exceed BSL-2 standards. However, the physical space (Noland 438 suite) that serves as the Museum's preparation laboratory, did not meet the required UW Biosafety Level 2 (BSL-2) basic facility standards in a variety of ways. The laboratory space and most fixed equipment (fume hoods, sinks and one walk-in freezer) were original to the building (built and/or installed in 1971). By the time the remodel was completed, the only existing equipment that remained was the walk-in freezer that was installed in 2008.

These major upgrades improved the utility of the Preparation Laboratory at the University of Wisconsin Zoological Museum and brought the facility to the appropriate BSL-2 safety standards. This space is essential to the growth of the Museum collections which provide support for educational opportunities at UW Madison. In addition, this space is a teaching laboratory for students from all over campus. With improved physical space, we can continue to expand the Museum's participation in education, research and outreach.



As part of the Instructional Laboratory Modernization Grant, the large walk-in freezer in the preparation room was replaced. We were also able to purchase a second -80 freezer. With additional funding from the Dean, the compressor system for the small walk-in freezer will be replaced in 2024. And, the quarantine chest freezer was recently replaced after 25 years of service.

Two views of back workroom.



Opposite page, Laura reveals the new walk-in freezer in the prep lab. Behind her is a new chest freezer. Below, more new freezers reside in the basement of Noland Hall.





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Daily business for UWZM 2023 adds up: Collections Manager Emily Halverson prefers the following stats:

39 tours for about 350 people

76 loans totaling 1670 specimens

77 accessions totaling 1286 specimens

including five mudpuppies

Ben's spider type specimens

and a mountain lion skeleton



*A European fallow deer (Dama dama)
walks the UWZM hallway*