



# COLLECTIONS

2024 Report of the University of Wisconsin–Madison Zoological Museum



Photo by K. Elliot

## **Butterfly** ***Ellipsaria lineolata***

This bright medium-sized mussel is aptly named; when opened and its shells abutted at the apex, it very much resembles a butterfly! A big-river mussel, the Butterfly is found in the Mississippi River and its large tributaries. Once widespread, it is now only locally abundant and disappearing from much of its former distribution. It is endangered in Wisconsin, and Threatened or a Species of Special Concern in several Midwestern states. Shells are part of the UWZM mollusk collection.

## Forward from Prashant Sharma, UWZM Director



Firstly, I am overjoyed to congratulate Laura Monahan on her Distinguished Status award from the College! Among the many things we celebrate this year, the recent news of her well-deserved promotion crowns the growing list of her accomplishments.

On the invertebrates side of the Museum, among the research highlights of 2024 were a systematic revision of camel spider (Solifugae) higher-level relationships. Using molecular sequencing of museum specimens, we were able to define three new families of these arid-adapted arachnids from Africa and Asia. We also established the first molecular phylogeny of whip spiders (Amblypygi), another poorly studied arachnid order, after encountering a living specimen of a relictual lineage that was last seen over 120 years ago. Former graduate student Guilherme Gainett (now a postdoctoral researcher at Harvard University) published his discovery of the presence of two pairs of vestigial eyes in daddy-longlegs—a discovery that substantially changed our interpretation of this group's Carboniferous fossils. Guilherme's work was prominently featured in The New York Times and in a Wisconsin Public Radio interview! Former graduate student Emily Setton (now a postdoctoral researcher at the Whitney Laboratory for Marine Bioscience) discovered and named a new gene that makes the spider's narrow waist (appropriately called "waist-less"). Current graduate student Benjamin Klementz discovered the developmental genetic basis for the patella, a leg segment restricted to chelicerate arthropods. And former undergraduate student and Hildale award winner Hugh Steiner applied machine learning algorithms to test species limits of blind cave spiders of Israel.

This year, we enjoyed a short excursion to Devil's Lake State Park for the collection of invertebrate tissues for our collections, as well as for our ongoing genome sequencing projects. Other fieldwork include sites in the American south and southeast (Texas, Georgia, Florida). The first of these datasets was just released at the time of this writing, a chromosomal-level genome for the giant vinegareon *Mastigoproctus giganteus*

from Texas and the first genome for this arachnid order. A similar dataset is presently under review for the sea spider *Pycnogonum littorale*. These much-needed resources are paving the way for understanding the evolution of genome architecture in ancient invertebrate groups.

I look forward to another productive year full of discoveries and growth for our collections. I was humbled and honored to receive a Vilas Mid-Career Faculty Investigator Award this fall during my sabbatical. Upon my return from sabbatical in January 2025, I look forward to investing in building research capacity for the Museum through the generous support of the Vilas Foundation.

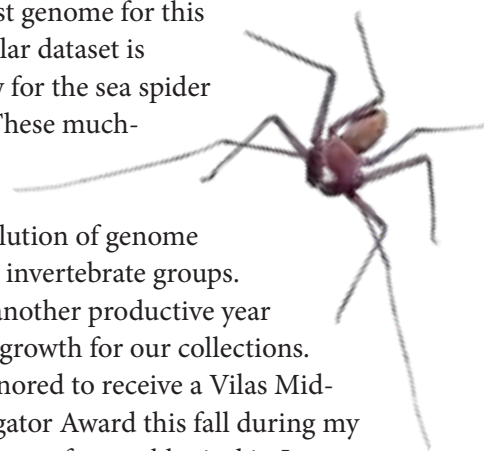


Photo by L. Monahan

## Distinguished!



Photo by K. Elliot

UWZM Associate Director, Curator of Osteology, and Distinguished Laura Monahan

In December Laura Monahan was promoted to Distinguished Status! Who is defined as Distinguished? According to the Office of the Secretary of the Academic Staff, "An academic staff member at the Distinguished level performs at a level of proficiency typically requiring extensive experience and advanced knowledge and skills. The expertise of an academic staff member at this level is commonly recognized by their peers and through a reputation which extends beyond their work unit. A Distinguished academic staff member is expected to develop new approaches, methods or techniques to resolve or prevent problems with little or no expert guidance and to cope independently with new, unexpected or complex situations. At this level, an academic staff member can be expected to guide or train other staff or to oversee their work ...A candidate nominated for the Distinguished status is expected to demonstrate exceptional performance, be recognized beyond the work unit as outstanding, and have a reputation of excellence in the profession."

UWZM staff appreciate all Laura does for the Museum and think this is a very well-deserved honor!

# People



Photo courtesy R. Muir

Hiking the John Muir Trail, Yosemite National Park—a family tradition!



Photos by K. Elliot

Rachel and graduate student Patricia Zito, sorting through a large collection of freshwater mussel specimens recently donated to the museum.

A new addition to our staff is Rachel Muir, Honorary Fellow and Adjunct Curator of Mollusks, who recently moved to Madison to reconnect with her Wisconsin roots from a long career in Washington DC and a “temporary retirement” in the southern Appalachian Mountains in North Carolina. Rachel joins the Zoological Museum with a background in Federal service in a variety of environmental fields and for agencies that included the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. Geological Service, and the Executive Office of the President, Office of Science and Technology Policy. One of her lifetime passions has been an interest in threatened and endangered species. Her interest started as an undergraduate at Virginia Tech, where she worked as a technician surveying one of the most diverse freshwater ecosystems in North America, the Upper Tennessee Basin. There she discovered the extraordinary diversity and abundance of freshwater mollusks to be found and was hooked. Her career path took her many places and across many disciplines, but always came back to the conservation of “the little things,” especially endangered invertebrates and plants. As an honorary fellow and adjunct curator, she hopes to further develop the UWZM mollusk collections to be a research-grade scientific and educational resource for Wisconsin and the upper Midwest.



*Elliptio dilatata* from the Bark River, WI



Photo by K. Elliot

## Peter Overton

In the late 1970s Elizabeth Pillaert (UW–Zoological Museum Emeritus Curator of Osteology) purchased an Apple II computer, and graduate student Peter Overton (MS Zoology 1980) began part-time support to the Museum as a Database Manager. The osteology specimens entered into this innovative computer may represent the earliest (if not the first) electronic recordings of any university natural history items.

Peter left Madison for 30 years to become a scientist supporting the Department of Defense and the Intelligence Community in the Washington, DC area. During this period, computer technology advanced, on line resources became available, and the UWZM staff expanded their database entries. When Peter retired in 2015, he returned to Madison and became a volunteer at the Museum.

Peter is now a Department of Integrative Biology Honorary Fellow where he continues to volunteer at the UWZM. Under guidance from Museum Collections Manager Emily Halverson, Peter’s activities include all facets of data management. As he says, “Museum specimens require accurate, verifiable, and accessible on line data in order to be used by the research community.” And Laura Monahan, UWZM Distinguished Associate Director and Curator of Osteology, adds that “Peter is a reliable and detail-oriented volunteer whose service to the Museum we greatly appreciate!”

## Marlin Johnson



Photo by J. Lyons

Marlin and Laura Monahan, summer 2024

Marlin Johnson grew up in northern Wisconsin. His father worked for the Soil Conservation Service (now the Natural Resources Conservation Service) and they also owned properties that his dad, two brothers and he spent weekends improving. His natural curiosity and time spent in the outdoors contributed to his love of nature and ultimately steered him toward a career teaching natural history and land restoration and management.

Marlin had a high school biology course and teacher that helped foster his interest in science, specifically aquatic organisms. At UW–Madison Marlin earned a bachelor's degree in secondary education and a Master's Degree in Botany and Zoology, specializing in ecology. (Note: As a graduate student, Marlin was a teaching assistant for Field Zoology, which was taught by Bill Reeder—former Zoology Professor and Museum Director. He was the TA for Kandis Elliot's laboratory). This class is where he found his interest in Wisconsin fishes.

In 1967, Marlin went to UW–Waukesha to teach Biology. Shortly thereafter, UW–W was bequeathed what is now the UW–Waukesha Field Station, ten miles west of campus. Marlin was eager to take on the responsibility of half-time resident manager of the property. The 98-acre Field Station featured an old farmhouse and some outbuildings, and Marlin spent the past 55 years residing at and restoring the land to native Wisconsin Plant Communities, including southern prairie and northern hardwood and conifer forests. He modeled the Field Station after the University Arboretum in Madison. Although he retired from his UW–W teaching role in 1997, Marlin continued to serve as Manager of the Field Station until 2017. He continues to rent the 1844 farmhouse and serves as an informed teacher to many visitors there throughout the year.

In 2007 Marlin donated to the UW–Zoological Museum approximately 1,000 lots of fish specimens that he collected from 1962–1994 from five different states and over 30 counties in Wisconsin. He came every week for an entire year to work with a student, preparing his collections for incorporation into the Museum collection. In total, he deposited 1,654 lots of fish, approximately 15,500 specimens. Marlin has been involved at the Museum for over six decades and has served as an official Adjunct Associate Curator of Fishes for the Museum for nearly twenty years.

In 2024, we visited Marlin at the UW–Waukesha Prairie for a couple of tours. He was a gracious host who shared his life's work with us.



Photo by K. Elliot

## Spheres of Influence: Glass Across UW

Exhibit at the Ruth Davis Design Gallery

October 16, 2024— March 9, 2025

RUTH DAVIS  
DESIGN  
GALLERY

1210

Helen Lee and Kagen Dunn from the UW–Madison Art Department curated an exhibit glass and its history at UW–Madison. UW–Madison is home to the first academic glass program in the nation, but glass always been deeply entangled in the research and teaching at UW. The “...exhibition brings together glass from nine research and teaching collections across campus, offering different perspectives on: the definition of glass itself; the range of how the material can be shaped; and the methods of seeing and thinking made possible with this material.”

The UWZM contributed Blaschka models, glass microscope slides from the Harland Mossman histological collection, and a glass sponge in a domed vitrine.

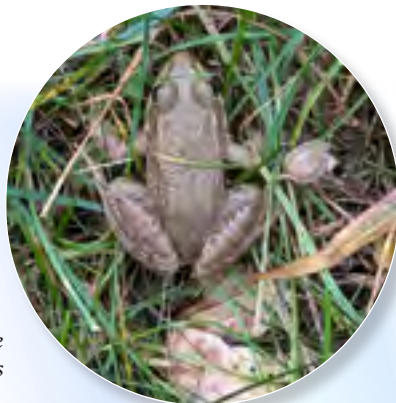
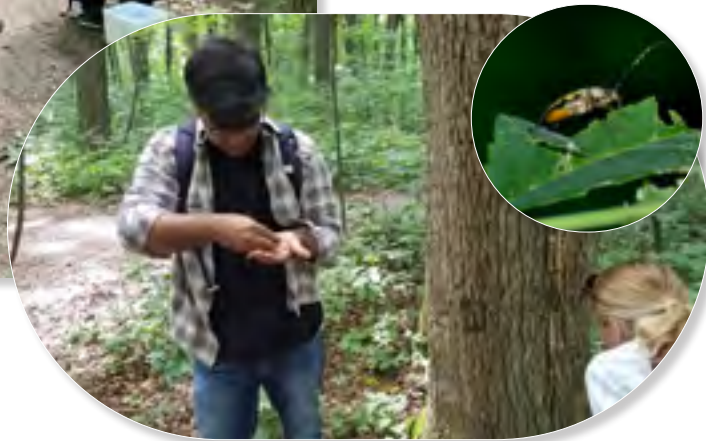
## Statistics for 2024

- 38 tours for 400 people
- 96 loans comprised of 2,738 specimens
- 96 accessions comprised of more than 1,800 specimens
- Highlights for new specimens:
  - Snow leopard
  - Two wolves
  - Harbor seal
  - Masai giraffe
  - 71-year-old red-crowned Amazon parrot

Emily Halverson  
Collections Manager

## July 2024 Field Trip to Devil's Lake

In July, Prashant Sharma led a field trip to Devil's Lake to show Museum staff how to hand collect harvestman spiders and other terrestrial invertebrates. Below, comely crew: Emily Halverson, UWZM Collections Manager; John Stuhler, Curator of Mammals and Birds; Gregory Mayer, Adjunct Curator of Amphibians and Reptiles; John Lyons, Curator of Fishes; and Prashant Sharma, IBio Associate Professor and UWZM Faculty Director. Behind the camera: Laura Monahan, Distinguished Associate Director and Curator of Osteology.



Green Frog  
*Lithobates clamitans*



Tiger Salamander  
*Ambystoma tigrinum*

## Rainy Day Visitors

3+ inches of rain overnight brought Janet Speth some window-well visitors. She grabbed some photos just before the critters vanished into the wilderness.

## The Museum Store

The Zoological Museum store has gone over to the "light side" with the addition of Botanical Posters. We have 7 posters created by Kandis Elliot during her tenure as the UW-Senior Botany Artist. The posters offer fascinating images and information on flowers, fruits, colors, plant structures, pollinators, even fungi. Reference photos were taken by Botany Photographer Claudia Lipke; information was provided by Dr. M. M. Fayyaz, Director of the Botany Garden and Greenhouses, as well as by Botany Department professors and staff. Like our selection of Zoology-themed posters, these educational outreach materials are excellent sources of basic science intended for students of all ages as well as educators, gardeners, and aficionados of plants and their biology.





## Equipment

### Small Walk-In Freezer

In 2024, the preparation room was nearly entirely remodeled. The one piece of equipment that was left in the space was the small walk-in freezer, which had been replaced around 2008. Although the freezer appeared to be running well, it was noticeably louder than the new, larger walk-in freezer next door. More importantly, a valve was stuck open and the water chilled system continuously drained down the large waste water stack that spans the height of the building. The constantly running hard water narrowed and

eventually closed off the pipe, leading to two significant blockages and leaks in the past nine years. These leaks had major impacts on the 4th floor of Noland as well as other floors below, some of which required insurance payouts to replace materials and equipment. Therefore, L&S agreed to replace the loud compressor and condenser, as well as the faulty valve, piping and insulation. The work began in December 2024 and is expected to be completed early in 2025.

### 3-D Printer

Museum staff collaborated with staff from Biology 151/152, Biology/Zoology 102, Zoology 430 (Comparative Anatomy) and Biocore to submit a Madison Initiative for Undergraduates (MIU) grant proposal. Our proposal was funded and allowed us to purchase a 3-D scanner and printer, in order to enhance biology laboratory courses. We developed this proposal because there are situations in which the Museum does not have needed specimens and cannot obtain them because the species is extinct, or specimens are otherwise too difficult to obtain. In some cases, the specimens in the Museum collection are too fragile for handling or species are represented by one or only a few specimens and therefore have limited usage in teaching. One example is the collection of Galapagos Finch specimens, salvaged as part of a collecting agreement between the UWZM,

the Ecuadorian government, and the national parks. This collection contains voucher specimens representing eleven finch species, none of which could be replaced if lost or broken. Galapagos Finches are a perfect example of specimens we want to show students as they have learned extensively about these charismatic organisms, but due to the limitations described above, we do not necessarily want students to handle the real specimens. A 3D scanner and printer would allow us to provide laboratory courses with specimens we previously have not been able to provide. All collaborators agree that printed specimens would not be a replacement of Museum specimens but would increase and change utilization of Museum specimens. This could also broaden the use and impact of Museum specimens by making scans available on open-source 3D modeling programs.

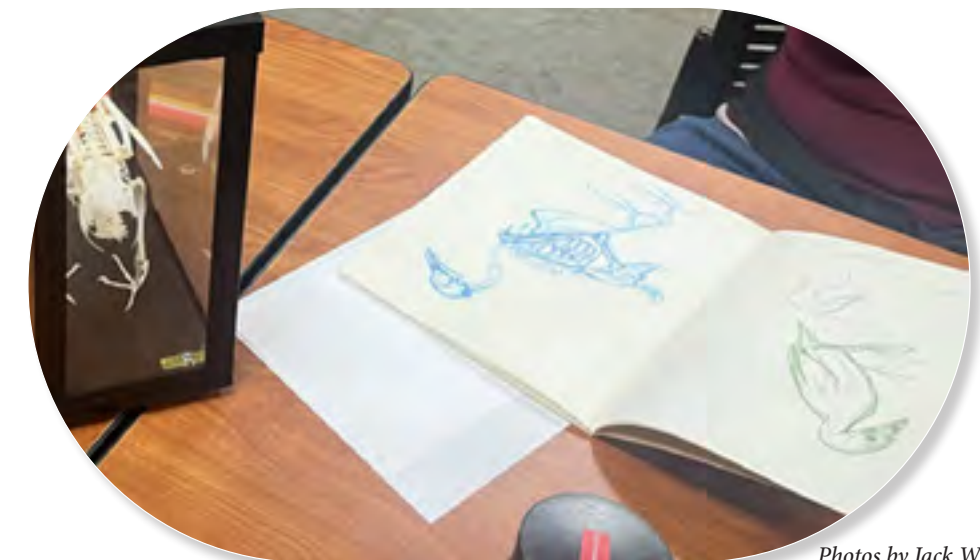


## NRF Workshops

Every year, the Natural Resources Foundation of Wisconsin organizes hundreds of field trips that encourage members to explore nature. In 2024, it offered 275 Field Trips with over 5,500 attendees. Museum staff and a volunteer hosted two field trips, offering attendees the opportunity to explore the Museum in a variety of ways.

First, in August, John Stuhler and Emily Halverson hosted a workshop entitled “Mammals of Wisconsin: UW Zoological Museum Tour and Honing ID Skills.” This workshop included a lab on mammal identification for species in the state using important diagnostic characteristics. Then, participants were invited on a behind-the-scenes tour of the Museum to explore specimens that are not typically accessible to the public. This workshop was very well received and will be offered again in 2025!

In September, volunteer Jack Whisenant offered a workshop called, “Sketching in the UW Zoological Museum.” This workshop was geared toward nature lovers who also love art. Attendees started by drawing skeletal anatomy and bones and then moved to furred and feathered taxidermy mounts. They were taught to look at the full specimen, and also the close-up details of both mammalian and avian subjects.



Photos by Jack Whisenant



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Photo by K. Elliot

**Higgins Eye**  
***Lampsilis higginsii***

This beautiful big-river mussel was once taken for its nacre, which was used to make “seeds” for the cultured pearl industry. Native to the Mississippi River and its larger tributaries, the Higgins Eye is now on the Federally Endangered Species list. These shells are part of the UWZM mollusk collection. The photo shows both male and female individuals—can you identify them?