Issue # 2

COLLECTIONS

Report of the
University of Wisconsin–Madison
Zoological Museum



Study skins made in 2022 by Jacki Whisenant (LTE), Jackson Guthart (student worker), and Dianna Krejsa

UWZM People and Pictures 2022

Forward from Prashant Sharma, UWZM Director

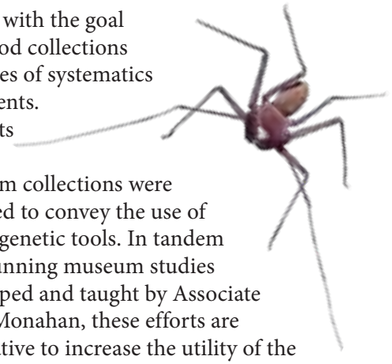


It is with great excitement that I take on the responsibility of Faculty Director of the Zoology Museum. As a newly minted Associate Professor in the IBio Department, my research integrates systematics, phylogeny, and development of invertebrates, with emphasis on arachnids. A significant facet of this program focuses on biodiversity discovery of arachnids in tropical and subtropical habitats, something I have been pursuing for about twenty years.

I have been drawn to museum-based science since my freshman year in college, when I stumbled upon a work-study job advertisement at the Museum of Comparative Zoology. The work entailed taking scanning electron micrographs of undescribed arachnid species from New Zealand. I promptly fell in love with all the animals in those jars and the mission of natural history collections. I thus continued my studies in biology, both through graduate and postdoctoral training, in natural history museums. In many ways, I never stopped looking through those jars—the museum is what I have always considered my professional home.

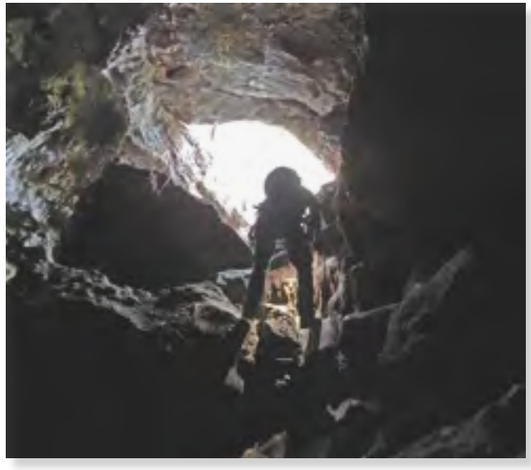
As I look ahead to the coming year in my new role, I hope to celebrate and share the value of our natural history collection with students through greater integration with research and teaching efforts. Towards the goal of growing the collections, a recent fieldwork expedition to Israel in August of this year yielded the deposition of several species of camel spiders and scorpions to the Museum, constituting an extension of our ongoing collaboration with Israel's National Natural History Collections at the Hebrew University of Jerusalem. In the coming year, I look forward to augmenting the types collection of our Museum, through the deposition of material for several newly described species from Israel, Thailand, the Philippines, Argentina, and elsewhere. The growth of our collections is part of collections-based research efforts to describe and document highly vulnerable species unknown to science.

Teaching through the Museum's resources is a vital part of our education agenda. This year, a new laboratory exercise developed for introductory biology brought specimens of scorpions, horseshoe crabs, centipedes, mantis shrimp, velvet worms, and more into classrooms, with the goal of using arthropod collections to teach principles of systematics to over 450 students. Sequence datasets developed from our museum collections were among those used to convey the use of molecular phylogenetic tools. 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. In the coming spring semester, museum collections will feature prominently in several courses on organismal biology, among them a dedicated course on invertebrate evolution, with a planned visit to the Field Museum of Natural History in Chicago and a behind-the-scenes tour of the collections for ca. 85 students. I view such links between natural history collections as key to our Museum's growth and vitality.



Looking to the future, we at the Museum look to capitalize upon opportunities for growth in research and teaching areas. Our goals in the next five years will focus on developing new capacities for imaging of biological samples; molecular biology operations for sequence-based investigations of ancient DNA and sustainability science; and a fieldwork program for undergraduate and graduate students who are making use of the collections. For my part, I am humbled by the responsibility I have assumed, yet I look to the task ahead with enthusiasm and delight.

It's good to be home.



Dianna Krejsa Heads to Kansas



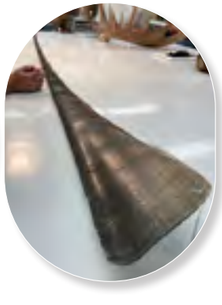
Danielle Land (MSB undergrad), Toni Androski (MSB grad student), Jocelyn Colella (KU Curator of Mammals), Tabitha McFarland (MSB grad student), Dianna Krejsa, and Ben Wiens (KU graduate student) stand with some of the trip specimens in Yellowknife, Northwest Territories.

After two years at UWZM, Dianna Krejsa is heading to the University of Kansas Biodiversity Institute as Collections Manager of Mammals in January 2023. Dianna came to the UWZM with an emphasis on the extended specimen—expanding the diversity of preparation types and data taken from each specimen—and had several impacts relating to specimen preparation protocol as well as new sources of archival collaborations. Below is a list of some of Dianna's contributions while at the UWZM:

- Implementation of a frozen tissues collection and protocols for continued collection growth.
- Implementation of parasite screening, collection, and archival protocol (collaboration with the Wisconsin Insect Research Collection for archiving ectoparasites).
- Implementation of BSL-2 BioArrow Safety Protocol for the UWZM Preparation Laboratory.
- Implementation of new written protocols for study skin preparation and establishment of a skillset and tradition of study skin preparation among student workers.
- Re-establishment of the dermestarium to eliminate pest insects (red legged ham beetles) from the colony and help limit risk of pest transfer to the research collection.
- Achievement of approved IACUC protocol and WDNR Scientific Research License for field collecting of small mammals in the state.
- Cleaning and rehousing of UWZM taxidermy mounts, removal of coal dust from Mammal/Bird collection space, and coordination of installation of LED no-heat lighting.
- Establishment of archival relationships with the WDNR and the Wisconsin State Laboratory of Hygiene for bat specimen archival (more than 800 specimens).
- Establishment of collaborative research relationships between colleagues in Yellowknife, NWT, Canada, KU Biodiversity Institute, Museum of Southwestern Biology, and the UWZM for continued fieldwork and archival collaboration in the future.
- Rehousing and inventory of more than 450 fluid specimens from the Wilbur B. Quay specimen collection (diverse small mammals and cetacean specimens from 1950-1970) that will be all-new to searchable databases.
- Taxonomic re-ordering and rehousing of the mammal and bird fluid collections with integration of many new specimens.
- Host of more than 100 researchers and curious community members by way of "Forensic Science" camp, a Natural Resource Foundation of Wisconsin fundraising event, mammal identification workshop, career day interviews, and museum tours.
- Mentorship of 26+ fantastic students in the preparation laboratory and around the collections.







Skinning a snake, crow skin, baleen.

The Day I Almost Found a Caribou

By Janet Speth, UW Zoological Museum Zooarchaeologist

The UW Madison Zoological Museum has been a resource for archaeologists for decades. I currently use these resources to identify animal remains from the Silver Mound site complex (47JA21) in Jackson County, Wisconsin. Several different areas at this site complex were excavated in the 1970s by UW–Oshkosh archeological field schools and it is with these remains that I am working.

Among the animal bones recovered from the Silver Mound site was the distal end of a humerus. The humerus had been wrapped in aluminum foil and tagged with the note that it was probably from a carnivore. The bone's size was roughly that of a white-tailed deer or gray wolf humerus, and possessed a deep olecranon fossa on the posterior distal side of the bone. Clumps of dirt and rootlets filled the marrow cavity and olecranon fossa. When some of these clumps were removed, it became apparent that the humerus did not come from a wolf or other canid as no foramen existed in the olecranon fossa. The bone's anterior coronoid and radial fossas were much shallower than those of a white-tailed deer. The size of the bone precluded it coming from an elk or a bear, or any of the smaller mammals recovered from the site.



Silver Mound site complex (47JA21) in Jackson County, Wisconsin.

Remembering that pronghorn had been excavated from a rockshelter in Grant County, Wisconsin, I checked the UWZM's pronghorn specimens. These also had shallow coronoid and radial fossae, but the configuration of the supracondylar ridge in relation to the other features on the bone was not an exact match.

Could this bone possibly belong to a caribou? Abundant evidence exists to show that the toolstone at Silver Mound had been used and valued by people living in the Midwest since the end of the Ice Age. It has been suggested that this site and its high quality toolstone were part of the mobility pattern and practice for people exploiting caribou herds in the late glacial period. I checked the UWZM's caribou skeleton and found that the coronoid fossa, the radial fossa and the supracondylar ridge configuration matched the caribou more closely than the previous skeletons I examined.

From time to time bones and antlers from Wisconsin's Ice Age megafauna are recovered from fields, bogs and lakes, but rarely in association with human-made artifacts. I could think of no caribou from an archeological site in Wisconsin. The sticking point was that the bone from Silver Mound was only about three-quarters the size of the UWZM caribou specimen. Sexual dimorphism? A different population? I set the bone aside to consider another day.

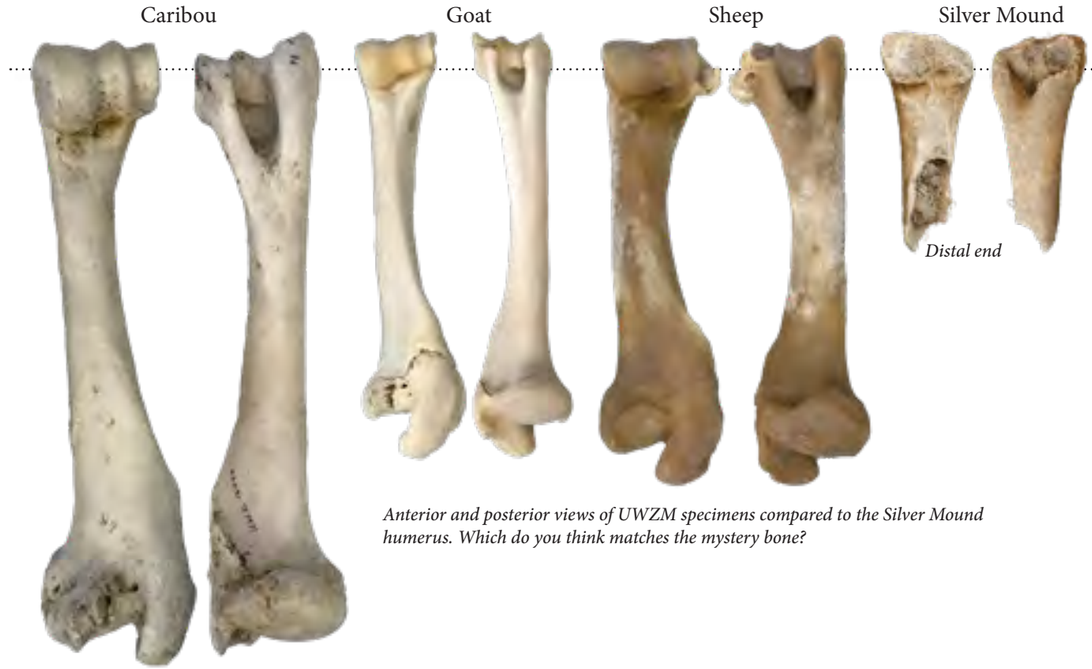
The bone refused to be dismissed from my imagination—if it were a caribou, this could help confirm some of the hypotheses used to explain the distribution of the Silver Mound toolstone across the Midwest. Positioning of archeological sites from this time period on the landscape makes sense if this assumption is valid, but proof in the way of caribou bones has been nonexistent in Wisconsin.

And yet…the small clumps of dirt reminded me of soil that has been more recently disturbed. The bone itself was in excellent condition. These two factors were hard to reconcile with a great age for the specimen.

On a long walk, still musing on the bone, it occurred to me that I had not checked domestic mammals. Horse and cow bones were much too large. The humerus was from a fully adult animal so the smaller size could not be an indicator of a young animal. Sheep and goats? These had to be checked before I could confidently state that I had found a caribou.

Fortunately, the UWZM had sheep and goat specimens, which I pulled, checked, and—you guessed it—found a beautiful match with the sheep in size and configuration and a less beautiful match with the goat. To confirm matters I removed the last of the dirt from the olecranon fossa and examined the structure of the superior part of the trochlea. This too was an excellent match for the sheep specimen.

I then asked Laura Monahan, UWZM Curator of Osteology, for her opinion on how the archeological specimen compared to sheep, goat and caribou humeri, without indicating the taxa of the specimens. Laura also chose the sheep as the closest match.



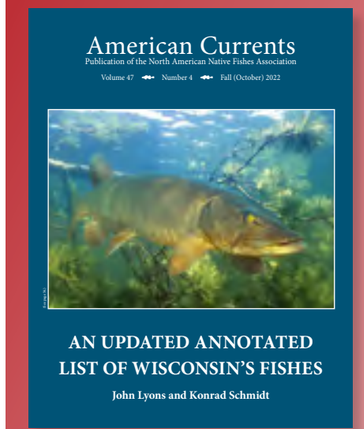
Anterior and posterior views of UWZM specimens compared to the Silver Mound humerus. Which do you think matches the mystery bone?

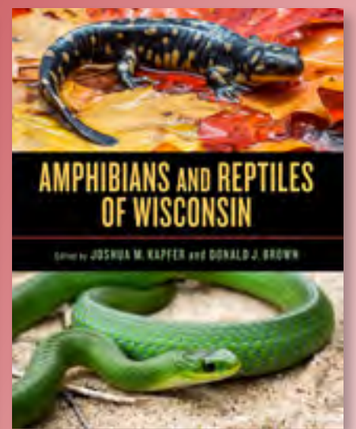
So—though I didn't find a caribou, I was able to accurately identify the specimen.

Why was I able to identify the specimen when the original analyst was not? The answer is simple—I had access to the extensive collection of skeletons and osteological specimens held by the UW Zoological Museum. Without the range and breadth of these collections, finding a match would have been a frustrating and ultimately fruitless effort. Obtaining an accurate identification was deeply satisfying even if it was not the exciting event that a caribou identification would have been.

I eventually learned that the Silver Mound site was once a sheep pasture.

Press Releases





An Updated Annotated List of Wisconsin's Fishes, by John Lyons and Konrad Schmidt, was published in the October issue of American Currents, the journal of the North American Native Fishes Association (NANFA).

University of Wisconsin Press has released *Natural History of Amphibians and Reptiles of Wisconsin,* edited by Joshua M. Kapfer and Donald J. Brown. This is a long overdue update of Richard Vogt's 1981 book of the same name published by the Milwaukee Public Museum.

Museum Staff Activities

2022 Midwest Archeological Conference

The 2022 Midwest Archeological Conference annual meeting was held in La Crosse, Wisconsin, in October. The conference theme was ***Sharing Perspectives,*** and avocational and professional archaeologists and representatives of Indigenous Nations met for three days to present and talk about topics of mutual interest.

Laura Monahan, UWZM Associate Director and Curator of Osteology, and Janet Speth, zooarchaeologist and honorary fellow at the Museum, attended the meeting and presented research grounded in the collections at the Zoological Museum, and in the long-standing interest in past climates and climate change in the UW–Madison Department of Anthropology and the Center for Climatic Research.

Janet organized a poster session about Anthropology Professor David A. Baerreis: **40 Years A. B. (After Baerreis): Recent Research into Past Environments and Climate Change through the Lens of Archeology.** At this session Laura presented a poster entitled ***At a Snail's Pace: Terrestrial Gastropods in Archeology.*** This poster focused attention on the David A. Baerreis snail collection, curated at the Zoology Museum. This collection includes snails from archeological sites as well as snails collected by Baerreis and others during the 1960s–1980s. A poster submitted by Janet in conjunction with Liz Pillaert, UWZM Curator Emerita, ***Bones, Blowing Dust and Snails,*** described the development of Baerreis's interest in past environments. The layout of both posters was done by the multi-talented Kandis Elliot, Senior Artist Emerita. Janet's poster went to the University of Iowa for display with some of Baerreis's excavation equipment from Iowa.

Laura and Dr. Jean Hudson, UW–Milwaukee, presented ***Of Dogs, Wolves, and Coyotes: Evaluating the Potential of Post-Cranial Osteometrics to Differentiate Fragmentary Archeological Canidae Remains.*** Dr. Hudson and her students measured elements of modern wolf and coyote specimens from the UWZM collections, to see if size was a reliable way to identify species of large canids. Results of this study may prove to be especially important for zooarchaeologists who often find canid bones in archeological contexts but are unable to provide a species identification. Dr. Hudson reminded her audience of what an important and valuable resource the Museum is for anyone working with animal remains from archeological sites.

NRF Day Tour and Workshop

Each year, the Natural Resource Foundation of Wisconsin hosts a series of Field Trips that help community members learn about their local natural resources. The events also serve as a fundraiser for NRF initiatives. This year, the UWZM hosted a Field Trip that included a tour of the museum followed by a lab on mammalian identification for species in the state. Participants learned about the state's mammals and how to ID them in the field, through binoculars, or from a skull."













Beyond the Walls

Trout Lake Station

by Dianna Krejsa

In late July, the UWZM staff took a group trip to Trout Lake Research Station to tour and utilize some of the facilities for a weekend of biological surveys and learning each other's taxon-specific sampling methods. The group deployed mammal traps at three localities and collected or observed a variety of species (jumping mice, deer mice, prairie voles, southern red-backed voles, two species of chipmunk, scolding red squirrels, gray squirrels, shrews, white-tailed deer, and raccoons).

The group also took advantage of opportunities to salvage herpetological specimens—a painted turtle and a snapping turtle were taken from the side of the road. Finally, an ichthyological survey with fyke nets was conducted at Escanaba Lake with the help of Greg Sass, Wisconsin DNR Fisheries Researcher. Eight species of fish were documented among three nets at the lake (black bullhead, catfish, northern pike, rock bass, smallmouth bass, bluegill, and pumpkinseed).



Greg Sass, Jason Miszaniec, Laura Monahan, and Greg Mayer pull up a large fyke net to document fish species assemblage at Escanaba Lake.



A pumpkinseed (Lepomis gibbosus) *and a bluegill* (Lepomis macrochirus) *caught during fyke net surveys.*



Museum Scientist Jason Miszaniec removes the skeletal head of a snapping turtle, Chelydra serpentina *for archiving at the UWZM.*



A good time was had by all.



Right: Bird and Mammal collections with Ben Marks, Collections Manager of Birds, and Adam Ferguson, Collections Manager of Mammals (back); Greg Mayer (front).

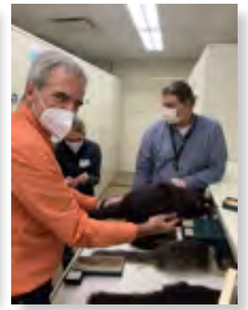
Field Museum

by Laura Monahan

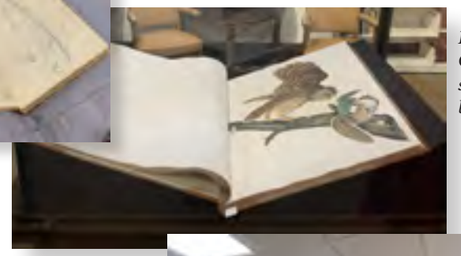
In November, UWZM staff traveled to the Chicago Field Museum of Natural History for collection tours. Greg Mayer, UWZM Adjunct Curator of Reptiles and Amphibians, also holds a position at the Field Museum and was able to arrange tours in the following collections: Birds, Mammals, Fishes, Reptiles and Amphibians, as well as the Special Collection in the library. It was interesting to see collections (and collection problems) at a larger scale.

Photos provided by UWZM attendees.









Left: At the library's Special Collections: Notebooks full of sketches, original illustrations by John James Audubon.

*Right: Laura holds the type specimen of the Hero shew (*Scutisorex somereni*).*







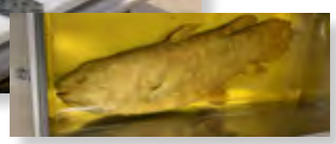
Joshua Mata, Assistant Collections Manager of Herpetology, with Andre, Giant Salamander in the genus Andrias, and in the Cryogenic lab.



Interesting finds.



Alligator gar.





The Rainbow beetles.

Partial 3D model being created.

Derek Kiesling • Iridescence and 3D Modeling

Iridescence of a humming bird, two views as the eye moves.

New Exhibits for Noland Hall

by Kandis Elliot

Museum Studies 405 students have an option to develop hands-on preparation skills for an extra credit. Artistically-inclined students may work with Kandis Elliot to create an informational outreach poster or an exhibit for a Noland or Birge display case.

The Noland Hall foyer case features a new exhibit by Derek Kiesling, who prepared a display on the complicated subjects of biotic iridescence and the preparation of 3D models for biology education. The difficulty and complex nature of both the subject matter and the display materials took Derek more than his 2021 Museum Studies semester, but the final exhibit is remarkable. Viewers get treated to iridescent UWZM specimens, two continuous videos of the physics of iridescence and the process of 3D modeling, and the airbrushed model of a beautiful *Phalacrognathus mulleri,* the Rainbow Stag beetle.

Lauren Jenny decided to teach viewers about Plovers, small shorebirds that often go overlooked by casual observers. Her watercolors of the rare Piping Plover, the Semipalmated Plover, and the related Killdeer are featured in her exhibit prepared for the 2022 Museum Studies course. This small display showcases information about plovers, birds in scientific illustration, Lauren's watercolors and UWZM specimens.

Lauren Jenny • Plovers

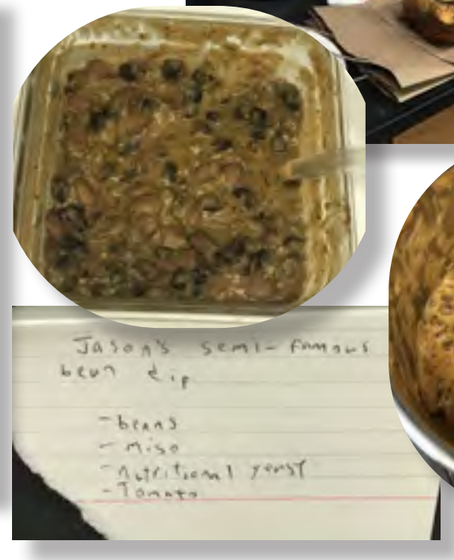


Par-tay!

December 15 Museum Holiday party featured a feast for staff, students, friends and family. Wonderful time for all!









Dianna's Hamburger Dip:
• 1 lb hamburger, browned & seasoned with salt, pepper, and garlic powder
• 1 lb 4oz Velveeta, original (the smaller box)
• 2 10 oz cans of Rotel, original (optional: pulse in a blender to reduce size of tomatoes)
• 1 10.5 oz can cream of mushroom soup
Combine all ingredients, warm on the stove top, and serve with tortilla chips or Frito scoops!



Buildings Housing the Dept. of Zoology
1875-1975

1875	University Hall (Bascom Hall)
1876	Science Hall (Destroyed by Fire in 1884)
1887	Science Hall (Present building)
1912	Biology Building (Changed to Birge Hall in 1950)
1924	Vivarium addition to Biology Building
1924	First building - Trout Lake
1931	Vivarium addition to Biology Building
1931	Lake Laboratory (End of N. Park Street)
1947 - 1957	T-17, T-18, T-24 (Teaching Labs only)
1952	Q-14 Laboratory of Limnology Annex
1957	Addition to Birge Hall
1962	Laboratory of Limnology
1964	Zoology Research Building
1967	Main Lab - Trout Lake
1972	Noland Hall

In addition, the Dept. of Zoology has used rooms in Comstock, Arboretum Barracks, Picnic Point, SMI, King Hall & Genetics for research, teaching and administration.

W. R. Holthaus
March 5, 1975

Little Bit'o History

Museum folks with more than 20 years under their UWZM belts will remember Walt Holthaus, who served as a building supervisor in Birge Hall and later Noland as well. He always had an eye out for what people were doing in "his" buildings and made sure that equipment worked and projects and classes were going smoothly. UWZM volunteer Peter Overton found this interesting list compiled by Walt, naming and dating the buildings in which the Zoology department was historically housed and classes were taught.

Walter R. Holthaus worked under the title Senior Administrative Program Specialist for 41 years, and retired in 1999.

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New Faces

Two new mounts joined the Mammals Collection, confiscations from the U.S. Fish and Wildlife Service. The lion arrived in 2021 and the wolf in 2022.