AMERICAN ARACHNOLOGICAL SOCIETY

American Arachnology

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Report of 2025 AAS Annual Meeting

Group Photo from 2025 AAS meeting.

By Jackie Billotte and Paula E. Cushing

Colorado School of Mines, nestled in the scenic beauty of Golden, Colorado, welcomed the American Arachnological Society for the 2025 Annual Meeting June 15th – June 19th. The meeting was attended by 172 attendees including 14 single (or multiple-day) local "arachnophiles" who took advantage of a unique opportunity to sample a scientific conference, meet professional scientists, and enjoy mingling with our community. All attendees shared in hearing some of the latest arachnology research while catching up with friends and colleagues. Attendees also included 21 meeting volunteers, most of whom help in the Denver

Museum of Nature and Science arachnology lab. Twenty-one accompanying participants took advantage of Colorado's scenery and charms. Of the registered participants 62 were students.

Prior to the start of the meeting, 25 folks attended a Linyphiidae identification workshop taught by Mike Draney, Marc Milne, and Nina Sandlin with help from Joey Slowik and Elijah Birtchman.

The 63 oral presentations showcased a diverse array of topics, spanning biodiversity, ecology, taxonomy, and beyond. Poster sessions echoed this variety, highlighting research in behavior, reproduction, education, and even the phylogenetics of arachnid creatures inspired by the tabletop card game *Magic: The Gathering.*

Mike Draney, Nina Sandlin, Marc Milne, Joey Slowik, & Elijah Birtchman at Linyphiidae pre-conference workshop.

Arachnid genetics were a highlight of this year's meeting, with a comprehensive Genomics Symposium and presentations by Jessica Garb on the genomics of spider silk, as well as Rodrigo Monjarez-Ruedas on population genomics and phylogenetics of mygalomorph spiders in the California Mountains.

AAS was proud to recognize outstanding contributions from our members through student presentation and poster awards (see report in this newsletter), career recognitions, and service honors. Congratulations to all of this year's award recipients. Special recognition should also be extended to the meeting organizing committee, student presentation judges, scientific program committee, and fantastic volunteers who gave their time to make sure 2025 Annual Meeting was a success.

Cheers to another wonderful annual meeting—and we'll see you next year for the 2026 AAS Annual Meeting in Lincoln, Nebraska!

2025 Student Presentation Winners

Congratulations to the winners of the Student Presentation awards during the 2025 AAS meeting!

Patrick Casto, poster presentation winner for his study "Investigation of behavioral patterns during olfactory-guided homing behavior in the amblypygid *Phrynus marginemaculatus*"

Lin Yan, poster presentation runner-up for "Heterospecific mate choice reveals hidden and variable female preferences in the *Habronattus clypeatus* group of jumping spiders."

Benjamin Klementz, oral presentation winner for "Discovering the developmental genetic mechanisms underlying appendage innovations in Chelicerates."

Colton Herzog, oral presentation runner-up for "Multi-elemental nutrient cycles driven by predator diet across multiple prey types." All winners shown with President, Linda Rayor.

2025 Platnick Award Recipient

Muhammad Irfan, winner of the 2025 Platnick Award.

The Norman Platnick Award for Taxonomic Research is presented to outstanding early career PhD researchers in honor of the late Dr. Norman Platnick whose prowess and tenacity greatly advanced systematic research into spiders and other arachnids. The 2025 winner of the Platnick award is Dr. Muhammad Irfan, postdoc at Southwest University, Chongqing, China. Dr. Irfan has published 52 publications, most of which are first authored. He has described 19 new genera and 282 new species. He has produced two taxonomic monographs in *Megataxa* (248 pp; 292 pp) and one in the *European Journal of Taxonomy* (85 pp.). These publications are highly authoritative treatments of linyphiid spiders with extensive use of imaging. The work involved in each of these volumes is monumental and displays his dedication to the taxonomy of arachnids.

2025 Student Research Grant Recipients

The American Arachnological Society has two funds to support research by student members of the society (undergraduate or graduate):

The Arachnological Research Fund (ARF) provides awards of up to $1,000 to support projects related to any aspect of the behavior, ecology, physiology, or evolution of any of the arachnid groups.

The Vincent Roth Fund for Systematics Research (VRF) provides awards of up to $1,000 to support projects focused on the taxonomy or systematics of any arachnid group.

The ARF and VRF committees received 30 proposals. Congratulations to the 2025 award recipients!

ARF Award winners:

- Steven Casey, PhD student, University of Massachusetts, Lowell, USA. $800. Molecular evolution of unique dragline silk in cribellate orb-weaving spiders and its connection to mechanical performance and web form.
- Nadia Castanon, MS student, Tarleton State University, USA. $450. Investigating the Impact of Invasive Plants and Grazing Practices on Spider Communities in Texas Rangelands.
- Poulami De, PhD student, University of Akron, USA. $600. How Prey Flight Noise Regulates Spider Hunting Behavior: Probing the Role of Airborne Sound in Priming Prey Capture Responses.
- Sage DeLong, MS student, University of Illinois, Chicago, USA. $750. The internal and external factors of the release of defensive chemical secretions in *Leiobunum* spp. Opiliones.
- Erin Golladay, MS student, University of South Alabama, USA. $900. Gene Expression Dynamics of Venom Replenishment across Time in Striped Bark Scorpions.
- Ella Kelner, MS student, University of North Carolina at Charlotte, USA. $350. An analysis of the flexural strength of *Hypochilus pococki* cribellate silk threads.
- Tyler Kulak, MS student, University of Massachusetts Boston, USA. $500. Biodiversity and Insecticide Sensitivity of Nantucket Bog Spiders.
- Anngelyk La Luz Maldonado, PhD student, University of Florida, USA. $750. Using experimental and micro-CT approaches to assess parasite manipulation of spider behavior.
- Julieta Ledda, PhD student, National University of Cordoba (UNC). Argentina. $600. Biodiversity of arachnids in the Mendoza foothills: Effect of urbanization and human perception.
- Jaclyn Mowry, MS student, Western Michigan University, USA. $500. Insect-Mediated Mercury Flux in the Kalamazoo River Area of Concern.

- Nikhil Kuni, PhD student, MIT World Peace University, Pune, India. $500. Spiders in Urban Web: Assessment of Correlates of Spider Diversity & Distribution in the Context of Changing Environment.
- Spencer Poscente, MS student, Eastern Michigan University, USA. $600. Love in the Fast Lane: Rapid Senescence at Sexual Maturity in Male Tarantulas (*Aphonopelma hentzi*).
- Rebecca Robertson, PhD student, University of Kentucky, USA. $700. Spider Web eDNA as a Passive Surveillance Tool for Biodiversity and Invasive Species Monitoring.

VRF Award Winners:

- Ian Ashton, MS student, San Diego State University, USA. $1,000. Testing a model of natural "reverse speciation" by evaluating hybrid zones in the *Habronattus americanus* species group (Araneae: Salticidae).
- Laura Caramori, MS student, Museu Nacional do Rio de Janeiro (UFRJ), Brasil. $700. Taxonomic review and phylogenetic analysis of *Heterocranaus* Roewer, 1913 (Opiliones: Cranaidae).
- Thakshila Herath, MS student, National Institute of Fundamental Studies, Sri Lanka. $450. Unravelling the Enigma of Phyaces: Phylogenetic and Biogeographic Insights into Sri Lanka's Endemic Salticids.
- Madeline Jones, UG student, Lewis & Clark College, USA. $950. Morphological Characteristics of Proposed New Species of *Trogloraptor*.
- María Emilia Tauber, MS student, Universidad de la Republica, Uruguay. $700. *Acanthoscurria* from Córdoba, Argentina, and Uruguay: one or more species?
- Aakash Kumar Pathak, PhD student, Indian Institute of Science Education and Research, Thiruvananthapuram, Kerala, India. $950. Population structure and barriers to gene flow in the widespread Indian social spider: Insights from the Western Ghats.
- María Paula Pereira, PhD student, Museo Argentino de Ciencias Naturales "Bernadino Rivadavia", Argentina. $1,000. Systematic revision of Kimulidae: Advancing Phylogenetic Understanding with Ultraconserved Elements.
- Iván López Ramírez, MS student, Centro de Investigaciones Biológicas del Noroeste SC. (CIBNOR), Mexico. $750. Integrative taxonomy for species delimitation of the spider genus *Steatoda* Sundevall, and *Asagena* Sundevall (Araneae: Theridiidae) (fulva group) from Mexico, with morphological and molecular evidence.

Recipients of an AAS student research grant are encouraged to volunteer with tasks at annual meetings of the society as a way to "pay forward" by helping with meeting activities.

English Language Review for Arachnologists Worldwide (ELRAW)

In order to support arachnology researchers throughout the world, the AAS provides free English language reviews of submission-ready manuscripts for arachnologists in countries who do not speak English as a first language. The manuscripts will be reviewed by fellow friendly arachnologists resulting in an improved manuscript ready for journal submission. The review process will be completely transparent, meaning the corresponding author and language reviewer will be put into direct email contact. The goal is to have reviews complete within two weeks of submission to the ELRAW personnel. Manuscripts can be submitted to elraw.aas@gmail.com.

Submission guidelines:

- This service is primarily to review English language clarity of arachnological manuscripts, not methodology or content.

- Manuscript should be in final draft format, i.e., ready to submit to the journal.
- When you are ready to submit the manuscript for language review, the corresponding author should contact: **elraw.aas@gmail.com**
- Include the formatted manuscript file (.doc, .docx) and any associated supplemental files that need language review.
- Please acknowledge the AAS DEI committee and associated reviewer by name (if available) in the manuscript's acknowledgements section.

If you would like to volunteer as a reviewer, or have any questions, please contact the ELRAW manager (Shahan Derkarabetian): **elraw.aas@gmail.com**

Graduate Studies Sponsors

Have you looked at the AAS website lately? There's a list on our Graduate Studies page of arachnologists who specialize on aspects of the biology of arachnids. Part of our continuing effort to promote and develop the field of arachnology, it is one way that we at AAS try to provide a service to the academic community.

If you sponsor graduate students and are not yet listed on our Graduate Studies page make sure to email webmaster@americanarachnology.org with your professional URL. If you are currently listed but are no longer accepting students in your lab (i.e. you have retired or are no longer active in arachnology), email the webmaster to let us know.

Modernizing the Membership Process

To simplify and improve the entire membership process, AAS is moving our membership payment processing to Stripe from PayPal. Stripe has lower (and simpler) fees as well as lower international currency conversion rates. It also supports a wider array of payment methods, including international cards, Apple Pay, and Google Pay.

In the new process, your membership will renew automatically every year on January 1st. Of course, you can change your payment method, or cancel your membership, at any time.

Membership fees for 2026 will remain the same as for 2025. We are, however, splitting Student and Retired memberships into separate categories so that we can target our announcements better (for example, not sending reminders about the student competition to retired people).

We have shut down the PayPal membership links at the website, and will be sending you an email with the new payment link for Stripe. Keep an eye out for it after the first of the year.

This modernization of the membership process will make it far more convenient. It will easier to maintain your membership and submit payments, and behind the scenes it will provide huge improvements for the society – and especially the membership secretary! We are excited about this much-needed change.

Spider Biology at the Southwest Research Station

July 1-10, 2025, 24 arachnologists gathered for a Spider Field Biology course at the American Museum of Natural History's Southwestern Research Station (SWRS) in the beautiful Chiricahua Mountains near Portal, Arizona. The course was led by Dr. Greta Binford (Professor of Biology, Lewis & Clark College), Dr. Marshal Hedin (Professor of Biology, San Diego State University), and Dr. Paula Cushing (Senior Curator of Invertebrate Zoology, Denver Museum of Nature & Science) and, with stellar support from local

Participants of the 2025 Spider Biology course at the Southwest Research Station in Portal, Arizona USA.

naturalist / biodiversity expert Wyatt Mendez. The course was an immersive opportunity to learn about the remarkable biodiversity of spiders and non-spider arachnids in diverse montane southeastern Arizona.

With a combination of lectures, field explorations and collections, and time at microscopes looking closely at specimens, a primary goal was to build skills in finding, responsibly collecting, curating and identifying spiders and other arachnids. This work was contextualized through participants learning spider phylogeny, details of internal anatomy and external morphology, and key aspects of spider ecology and evolution. Participants were also introduced to current research and cutting-edge questions in arachnology. The course had no prerequisites and was not credit bearing which provided much freedom for participants to engage at their own levels of interest.

The participants in the course brought a wide range of experience, age, interests and skills that contributed to a rich, collaborative learning experience. Participants ranged from undergraduates to retirees and included folks who were brand new to spiders, and experienced arachnologists, graduate students and faculty members who wanted to build their skills and depth of knowledge. The group also included renowned macrophotographers including Tom Astle and Marion Kirst who generously mentored photography skills, shared their talents and captured gorgeous images.

SWRS is hallowed ground for arachnology as Vince Roth was the station director from 1962 to 1986, and the region has been home to many legends in our field including Willis Gertsch and Martin Muma. Vince Roth was a founding member of the AAS and hosted the first AAS annual meetings at SWRS in 1972. The fauna of the region was detailed in Jung & Roth, 1974, and the majority of the collections included in that publication, and beyond, remain at SWRS. These collections were in great shape and were used as examples of the value of good curatorial practices. We were able to organize and update some curation of that collection during the course.

Paula Cushing, Barbara Roth, Greta Binford, and Marshal Hedin.

Vince Roth's memorial decorated with the web of a triangle-web spider, *Hyptiotes*.

After the end of the course, the three instructors made a pilgrimage to Vince Roth's and Martin Muma's final resting place. Muma was renowned for his work on solifuges, mites, and spiders. Vince Roth historically hosted spider courses at SWRS but those went dormant after his untimely death in 1997. The 2025 Spider Biology Course spring-boarded off of workshops led in

2014 and 2017 by Dr. Susan Reichart and Dr. G.B. Edwards, and fulfills a long held dream of Barbara Roth. We were honored to have Barbara make special appearances on the course, join us for a 4th of July celebration in Rodeo, NM, and host our closing party in the home she and Vince built. We plan to teach the course again in Summer 2027 with specific dates TBA. Mark your calendars!

2026 International Congress of Arachnology

The 23rd International Congress of Arachnology (ICA 2026), will be held from 15–21 November 2026 in Kochi, Kerala, India. The congress is being organized under the auspices of the International Society of Arachnology and will be hosted by Bharata Mata College, Kochi, and Devamatha College, Kuravilangad, both affiliated with Mahatma Gandhi University, Kottayam, Kerala. This marks the first time the ICA will be hosted in India — a land of extraordinary cultural diversity, scientific traditions, and ecological wealth. As one of the world's recognized megadiverse nations, India encompasses ecosystems ranging from the majestic Himalayas to the tropical Western Ghats, and from arid deserts to lush rainforests. With its long tradition of scholarship, discovery, and innovation, India offers an inspiring backdrop for international scientific exchange. Within this vibrant nation, Kochi — the "Queen of the Arabian Sea" — provides a unique setting where heritage meets modernity, offering delegates not only rich opportunities for scientific dialogue but also immersive cultural experiences. We warmly welcome the global arachnological community to India and look forward to your participation in making ICA 2026 a memorable celebration of science, culture, and collaboration. Visit https://ica2026.in/registration-form.asp to pre-register for the meeting.

Interview with Susan Riechert

In a continuing effort to capture memories of senior arachnologists, the *American Arachnology* newsletter editor (Paula Cushing) reached out to Susan Riechert who recently retired. Susan was asked the following questions:

- Can you tell me about your training in biology?
- How did you get involved in arachnology?
- What area of research are you best known for?
- What arachnologists did you work with or which did you consider your mentors?
- Where did you carry out your field research?
- What are some favorite stories of people in the field or of field expeditions?
- Who did you mentor or influence?
- What research or findings are you most proud of or most excited about?

Here is her response:

Susan at her home in Powell, TN from an article in Knox News.

"I started out as excelling in playing the French horn, but lost the hearing in my left ear, permanently so switched to majoring in English….. It was too boring. I found Zoology was more challenging and ended up taking a field zoology course which emphasized collecting fish for the zoological museum. I was the only female in the class and was soon banned from seining for fish when I stepped in a hole and went under water and had to be pulled out by the professor and one of the male students. Bored, I collected what was available to collect….spiders. Back in the lab, to get a good grade in the course, I learned to ID spiders and became very good at it. I was offered an office on the roof of the building in return for working on the collection. This also meant

traveling on all field trips (e.g., to the desert southwest, and even Africa). When it came time to go to grad school, I was offered a full scholarship and obtained monies to pursue what became an interest in spider behavior and ecology when I was introduced to the New Mexican lava beds.

"I never had an arachnid mentor. Went on to work with John Maynard Smith, a world famous behaviorist because my desert work led to spider contests over webs and I submitted a paper entitled "Games spiders play." I also obtained funding to work with the social spiders in Gabon.

"Along the way, I consulted for a drug company interested in venoms. I suggested *Agelenopsis sparta* would be a good choice as its venom merely arrests the flight of insects. We found a whole new calcium channel in the human nervous system that has led to a new group of drugs named agatoxins after *A. aperta* which made the cover of science magazine.

"I would be remiss if I did not mention the many hours I spent visiting with Willis Gertsch pouring over Wilton Ivy's spider collection. While Willis was really interested in butterflies, we did curate the spider collection which I have sent on to the Museum in New York. We also spent many afternoons swinging at butterflies from lawn chairs placed in the creek down the road from the Southwestern Research Station in Portal, Arizona. Vince Roth was the station director at the time. Willes was a special friend as was his wife who kept me in sweets she made. She always said they were only for me, but knew very well that Willis would help himself as well. They were such a cute couple in their interactions...staged huffiness.

"So it has been a great ride for me."

Addendum from the newsletter editor, Cushing: Susan trained or mentored nearly 40 graduate students and postdocs including several names familiar to our field including Nadia Ayoub, Sam Marshall, Rosemary Gillespie, Alan Cady, Angela Chuang, Deborah Smith, and Tomas C. Jones. She was elected an American Association for the Advancement of Science (AAAS) fellow, received countless awards for her research, served as President of the Animal Behavior Society of America and the American Arachnological Society. She received over $5 Million in grants from a variety of foundations and organizations and published well over 100 peer-reviewed papers. You can read a very nice article about Susan's career at

Susan and Rosie Gillespie at the 1998 ICA meeting in Chicago.

The Queen of Spiders Has Retired - Ecology & Evolutionary Biology

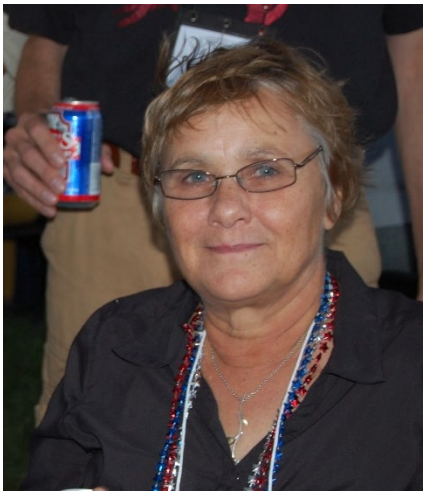
When I (Cushing) was undergraduate student at Virginia Tech (VT), Brent Opell (my advisor) invited Susan to drive over from the University of Tennessee, Knoxville (about a 3.5 hour drive), to give a talk in our Biology Department. After she arrived, she mentioned an article that had just been published in *Science*. At that time, the only way to read journal articles was if you got a physical copy of the journal. Brent mentioned that he had not yet seen the article in question. Susan said something along the lines of "Oh, well, I just got my copy this morning." I asked her when she'd had time to read the article since she must have left Knoxville pretty early to get to Blacksburg in time for her talk. Susan looked at me and said, "Well, I read it on the way here"…while she was driving!

Interview with Petra Sierwald

The newsletter editor (Cushing) also sent the same set of questions to Petra Sierwald. Her answers are below each question.

Can you tell me about your training in biology?

"I was trained at the University of Hamburg, Department Zoology. My advisor was Dr. Otto Kraus, co-founder of the Centre International de Myriapologie and Centre International de Arachnologique (not sure about the original name; now the International Society of Arachnology). He was also involved in the Zoological Museum of the Zoological insect/arthropod collection of Hamburg University. He was a



Petra Sierwald at the 2016 ICA / AAS meeting in Golden, Colorado.

member of the International Commission for Zoological Nomenclature (my husband Rudiger was also his PhD student and to this day he is the walking Code, ask him anything. Can you imagine what a great relationship Don Cameron and Rudiger had?! Don advised the Malacological world with his Greek and Latin knowledge and his deep knowledge of the ICZN. [See *American Arachnology* #87 for an article about Don Cameron.]

"I got a stipend from the Studienstiftung des Deutschen Volkes (100 years old) for 2 years to finish my PhD. Their funding was extremely good, I could focus on the Pisauridae full-time. So, fellowships for the next generation are important.

"I had a postdoctoral fellowship at the Smithsonian Institution (SI), under mentor Jonathan Coddington. That was a very good time, and I thank the SI and Jonathan for the opportunity and support. Without the SI postdoctoral fellowship, I would not have made it into the US. By the way: Jonathan sponsored and nurtured several arachnologists and they all got jobs!"

How did you get involved in arachnology?

"I always wanted to stay in Biology, research-wise. I was tempted by Botany, but there was a real good Arachnology course at the University of Kiel (2 hours by car from Hamburg). There I heard about Otto Kraus from Hamburg that he was an arachnologist. Hamburg did not have a range of -oology courses (only for Mammals) at that time (as it is today at the Universities around Chicago!)."

What area of research are you best known for?

"Pisauridae, morphology and ontogeny of female copulatory organs. I switched to millipedes with an NSF PEET grant in 1995. I have worked mainly on millipedes since then, see https://www.millibase.org/. At the center of my work at the museum has always been the specimen collections in arthropods and invertebrates, especially since these collections have never been strongly supported by the Institution (FMNH). I was the first one to digitize an arthropod collection (millipedes) at the specimen level."

What arachnologists did you work with or which did you consider your mentors?

"Jon Coddington was a mentor, also Charles Griswold. I worked with Jason Bond (he was my postdoc), and Michael Draney. I had millipede mentors (who are also often arachnologists) such as William A. Shear. I would also like to add Norman Platnick as one of my mentors-colleagues I worked with."

Where did you carry out your field research?

"South Africa (I lived there for a year in 1980, and several field visits afterwards), Myanmar, Cost Rica, Panama, Uruguay, Caribbean islands (Saba, Dominica), California, Oregon, Illinois, Florida"

What are some favorite stories of people in the field or of field expeditions?

"I traveled mostly with men, mainly arachnologists. They were all great and fair travel and field work companions. None of them had any inappropriate behavior. Either I am the ugliest woman in the universe, or Arachnologists are the best people in the world.

"One of the highlights of my career for me was the International Congress of Arachnology in 1998 in Chicago. Norman Platnick made that happen for me. Also, the annual meetings of the AAS were a lifesaver to me."

Who did you mentor or influence?

"Mainly millipede researchers: Paul Marek (VT), Thomas Wesener (Germany), Julian Bueno-Villegas (Mexico), Peter Decker (Germany), as well as numerous undergraduate students through the NSF REU grants."

What research or findings are you most proud of or most excited about?

"Research on the Pisauridae, with new species descriptions and the first cladistic analysis in the family. And for Diplopoda: MilliBase [https://www.millibase.org/]"

Petra asked to add a question to harvest the wisdom of the senior scientists:

"My current deep concern focuses on the future for collections and taxon expertise decline; lack of positions in invertebrates/arthropods. Currently, curator positions are being redefined towards strictly research, or remain open or curators (arachnologists) get fired. See Red list of taxonomists: https://red-list-taxonomists.eu/

"The AAS is a major reason that arachnology is still rather strong in the US, but [some are still being impacted by institutions like the California Academy of Sciences].

"At the Field Museum of Natural History in Chicago, tenure was abolished (I am one of the last), curators are on 7 year contracts.

"[Also of concern is] collections care, especially arthropods: there is a massive lack of collection support, lack of staff support, especially since we should now digitize specimens to make them and the data globally accessible. It is the main mission of a natural history museums with specimen collections to support, protect and develop this important piece of the Heritage of Mankind. Currently at the Field, it fails catastrophically in arthropods and other collections. 12 years ago, Research (a steady declining number of curators, and lots of new 'senior scientist') was separated from the Collection Center (all collection management staff). We had 5 directors in the 12 years. None of them ever produced an NSF grant for any collection. Two of the longest serving directors of the Collection center are/were anthropologists with no clue about biodiversity."

Tarantula Fest in Southeastern Colorado

By Cara Shillington and Devon Matthews (photos © Devon Mathews)

Banner over the town of La Junta.

The tarantula mating season in southeast Colorado is continuing to attract media and general public interest. This interest is often focused around La Junta, Colorado, which recently celebrated the 4th Annual Tarantula Fest (27-28th September 2025). As arachnophiles, this is a community where you don't have to explain why you study/like spiders or arachnids in general. The city buses display large tarantulas on the side year-round, not just for the festival or Halloween (and the legs are on the correct body segment!).

The mating season for the local tarantula (*Aphonopelma hentzi*) occurs from late August through early November and is notable for the large numbers of male tarantulas found out on the roads. As ectothermic animals, the exact timing of male activity (both seasonally and daily) is driven by environmental conditions, particularly temperature and humidity (Haselhuhn 2023; Shillington in prep). Since its inception, the Tarantula Fest encourages a responsible and respectful way for visitors to observe this fascinating natural event and this is supported by several educational opportunities that bring attention both to tarantulas, the general role of spiders in their ecosystems, and the local

grassland/prairie ecosystems (https://visitlajunta.net/tarantula-fest/) (this website is worth visiting for additional information about the festival and photos by Sue Keefer/Scene in the Wild Photography sceneinthewild.blog). Even without the draw of the tarantulas, these are diverse and beautiful areas that are well worth a visit.

Aphonopelma hentzi male crossing the road.

The festival begins on a Friday afternoon with a presentation by arachnologists. Paula Cushing was the very first keynote speaker during the 1st Tarantula Fest and is now joined by Cara Shillington. While the presentations delve into aspects of spider (emphasis on tarantula) life history, an equal amount of time is devoted to the Q&A session. The number and variety of questions around these animals is just so encouraging and inspiring but also emphasizes how much we still have to learn.

Key features and activities of the festival generally include (see visitalajunta website above):

Dallas Haselhuhn (left) and Cara Shillington (right) speaking with tour groups.

- Tarantula Tours: Guided bus tours out to the Comanche National Grassland, the best place to witness the male tarantulas in their natural habitat as they walk across the plains and roads. Stops along this tour provide time to talk with tarantula researchers from Eastern Michigan University (Dallas Haselhuhn & Cara Shillington) about current and future projects in the area.
- Educational Programs: At the Educational Pavilion, which runs most of the day on Saturday, biologists and spider experts engage with the public about local flora and fauna around the area. One of the mainstays at this event is a team of spider experts led by Paula Cushing from the Denver Museum of Nature & Science.
- Parade: A fun and unique "Tarantula Parade" in downtown La Junta.

Paula Cushing (left) and Jadon Gonzales (green shirt), member of 2025 SWRS Spider Biology class, answering questions at Educational Pavilion.

- Vendors and Food: Food trucks, local cafes and vendors selling tarantula-themed merchandise and menu specials.
- Other Activities: Events like a classic car show, an "eight-legged race," a "Hairy Leg Contest," and a spider-themed B movie showing at the local theater.
- Art: Downtown La Junta is decorated with spider and tarantula-themed art.

Tarantula Parade (left), spider-themed vendors (middle), tarantula-themed art in downtown La Junta, Colorado.

If you're looking for a place to show-off your latest arachnid-wear and accessories come and join the fun. However, this event is also changing how tarantulas are perceived by the general public. These changing sentiments are, in part, due to the wording used in articles. In 2019, headlines read "Colorado is being Invaded by Tarantulas" or "Nightmare in Colorado: Tarantulas on the move …." To be clear, this is not a migration or an invasion, tarantulas live in southeast Colorado year round and in large numbers. We are slowly starting to see a transition to increasingly accurate information and more positive sentiments towards the animals themselves, and this is supported and promoted by visitLaJunta.net and the Tarantula Fest Committee. This year's news headings included "Here's how to witness the season of love for tarantulas in Southern Colorado" and "Final, hopeful journey is underway for Colorado tarantulas." *Ranger Rick* magazine for children also featured a 5-page spread about tarantulas and the festival (*Ranger Rick*, October 2025). The article is by Devon Matthews (League of Conservation Photographers) who found his way to the first festival in 2022 and has returned annually and is now a volunteer with the Tarantula Fest Committee. Because of this publicity, tarantulas and the mating season in Colorado have also been featured more regularly in national wildlife-related publications National Wildlife Federation: https://www.nwf.org/Magazines/National-Wildlife/2023/Fall/Animals/Colorado-Tarantula-Festival and National Geographic (https://www.nationalgeographic.com/animals/article/tarantulas-spider-festival-colorado).

So, when planning your next safari, consider the prairies of southeast Colorado from September to October. Although tarantulas are found across a broad range of the southern US, what is unique about this area is the numbers of tarantulas. Having spent a good portion of my professional life focused on tarantulas, from my perspective, this is an extraordinary and wonderful region (Shillington, pers. obs).

Citations:

Haselhuhn D. 2024. Looking for love on a chilly night: The Colorado brown tarantula mating season. *Eastern Michigan University Master's Theses and Doctoral Dissertations* 1230.

Devon Matthews: https://www.devonmatthews.com/

Trials and Stridulations: Honoring an Arachnologist + Power of a Playful Mindset Leads to an Advance in Neuroimaging

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Abstract:

What do you get when you bring together an arachnologist, an artist, a computer scientist, a graduate student turned CEO, an orthopedic research doctor, the former White House executive pastry chef, and a museum curator to create a memorial for a world-renowned arachnologist? A tribute that evolved into a surprising journey of creativity and discovery—through designing a playable and edible musical instrument for the arachnologist's memorial led to an unexpected advancement in data visualization for neuroscience.

Keywords: art/science, creativity, collaboration, crosspollination, teambuilding, interdisciplinary innovation, spiders, neuroimaging.

Commemoration leads to Innovation:

We came together to honor the life of arachnologist Professor Herbert W. Levi (Herb) and his research partner and wife Lorna Rose Levi and give them a sweet send-off, taking inspiration from the animals he had dedicated his life to. In the process, we created a multiyear project that also provides an example that supports "cross-pollination of highly diverse teams with deep disciplinary knowledge to develop unexpected, innovative contributions" [1]. This project reinforced the power of a playful mindset, the value of diverse teams with deep disciplinary knowledge and experience, and how interdisciplinary teams can bring about innovation through creativity and collaboration in unpredictable ways.

Honoring Herb:

When Herb died, scientist and artist Dr. Sarah Karikó was asked to speak at his memorial. She imagined honoring her spider mentor with a one-of-a-kind send-off for someone who was both an opera aficionado and considered one of the world's leading arachnologists (spider scientists). Herb was renowned for his beautifully detailed scientific illustrations—especially depicting the baroque morphologies of epigynum and pedipalps (spider genitalia) and using multiple views of these morphological features as key characters for describing the 1,254 new species of spiders he described new to science [2,3].

She decided to look to the animals that Herb had dedicated most of his life to – spiders – for inspiration.

At heart, Herb was a field researcher. He spent significant time in the field collecting spiders for his research from all over the world, from the rainforests of Papua New Guinea, to the woodlands near his home in Pepperell, Massachusetts, to the Rocky Mountains where the Levi's spent many summers at the Rocky Mountain Biological Laboratory. He worked to assemble one of the largest arachnological collections in the world housed at Harvard's Museum of Comparative Zoology (MCZ) which has been used by researchers across the globe to better understand the biodiversity of spiders and the significant roles they play across Earth.

The Team:

When we first met in 2015 in the MCZ, some of us had no idea that we were surrounded by about a million spider specimens floating in vials inside jars. Nor did we know the powerful impact that this first meeting would have on a key project a few years later.

The team began to coalesce around the idea of creating a playable instrument based off of spider stridulating organs that could be played to an aria, such as the Grand March from Verdi's opera Aida at the Levis' memorial service. Stridulating organs are structures found on many animals that are often used to warn and woo predators and mates. Stridulating organs are widespread among spiders, having been documented in spiders from a minimum of 22 different families [4]. Male spiders typically use these organs for communicating with mates during courtship [5].

Methods: Spider Selection:

In 2005, Rudy Jocque, Curator of the Royal Museum of Central Africa in Belgium and Herb's colleague, described for the first time six stridulating organs on a single spider in the genus *Mallinella* in the family Zodariidae. This "one-male-band spider" uses his six stridulating organs comprised of ridges occurring on femurs on Legs I-IV and pegs "in the form of granulations" occurring on Legs II-IV. It is still unknown how these males operate these instruments and given their location, Jocque hypothesized that they are played "sequentially versus orchestrally" [6].

Sarah reached out to Rudy and he gladly shared his scanning electron micrographs (SEM). These were a great starting point, but led to frustration when the team could not use them to generate the kind of model they had hoped for.

Trials and Stridulations:

Once it became clear that the SEM would not help in the way that we had hoped, we went in search of another spider who we could work with locally. After an unsuccessful expedition to the Levi's house, the team returned to the museum.

Back to the Drawing Board and Museum Collections:

Sarah searched the Invertebrate Zoology research collections where Herb had begun his curatorial career nearly sixty years earlier, and found a spider that Herb had studied while on expedition (via steamership) with his family to the then Yugoslavia to try to help farmers experiencing an alleged black widow epidemic (Frances Levi, personal communication).

Big Data from Tiny Ones:

Sarah met with Dr. Aidin Masoudi, then a Research Fellow at Beth Israel Deaconess Medical Center, where they tried to microCT the spider. Unfortunately, the resolution was not sufficient for the small scale of the animal's structure and the data set had a high noise to signal ratio, making it difficult to use as we intended to create 3D molds. It did however create a large, noisy dataset.

Back to the Drawing Board and Laffy Taffy:

At one point a teammate suggested, if we are going to make this, "let's make it edible!" thus shaping the design parameters and increasing the challenge. We thought of lollipops--but when we presented the idea to former White House Executive pastry chef Bill Yosses (who Sarah was collaborating with on a Spiders & Food class), he pointed out that lollipop candy does not resonate sound well due to its lack of elasticity.

Many attempts to create a prototype did not work. Then, when Sarah and Dan arrived late for an event at Harvard's Memorial Church and were seated in overflow seating, they found a leftover plastic Easter egg. When Sarah opened it, she found a piece of Laffy Taffy. As the sun poured in and music filled this building where animals are carved on high of eight columns…inspiration flowed.

If regular lollipop material would not be a good sound resonator due to the physics and chemistry of the candy (Chef Bill Yosses, personal communication), what about caramel like Sugar Daddy lollipops?

Sweet Tributes:

Using a combination of artistic practices and scientific methods, Sarah freehanded drawings from the auto montage of the spider's stridulating organs, then took these drawings to Dr. Masoudi where they made 3D

molds using castable Polymethyl methacrylate (PMMA), a non-toxic, food safe material often used by orthopedic surgeons.

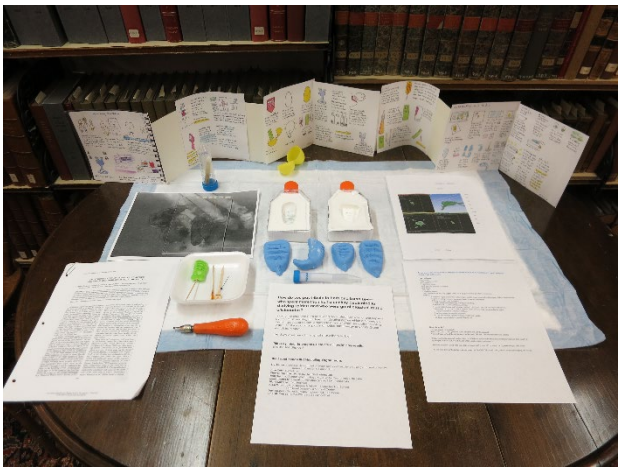

Figure 1. Models and workflow diagrams, from the Scanning Electron Micrograph to the molds of spider stridulating organs. Part of the memorial celebration for Prof. Herb and Lorna Levi in the Special Collections at Harvard's Ernst Mayr Library. Photo credit: S. J. Karikó.

It took us all this time to just get to this stage, so for the fast-approaching Memorial Event in the Special Collections at the Ernst Mayr library we presented a science fair-like table with our data, our progress to date, and a pictograph of our methods (Fig. 1).

On the morning of the Memorial event where Sarah was invited to speak, she began to make the caramel. The temperature did not behave as anticipated—it gets stuck around 200 degrees. Sarah kept stirring and Chef Yosses coached her (via text) explaining how there is often a pause before the temperature rapidly accelerates. Eventually she was able to create a few just in time for the Memorial—they were playable AND edible!

An Unexpected Innovation:

The story could have ended there. However, the very large and noisy microCT data set that we generated became the playground for teammate Charles Fracchia, founder and then-CEO of BioBright who was working on a DARPA-funded neuroimaging project. The volume of our data set combined with the small size of the sample we were trying to image pushed the limits of resolution of all existing visualization systems. However, the project came at the ideal time as the BioBright team had just invented a new, highly effective method of rendering large neurological imaging datasets (9M+ voxels) at greater than 60 frames per second on a cellphone. This foundation allowed Charles to directly render the volumetric microCT data to a 3D voxelated image and clean up the dataset manually, removing the large amount of noise (Fig. 2). The newly-created dataset could now be reinserted in more traditional 3D volume manipulation tools, and the stridulating organ was tessellated into a mesh file that could later be used for 3D printing. The 3D printed positive could then be used to create a food-safe negative mold of the stridulating organ.

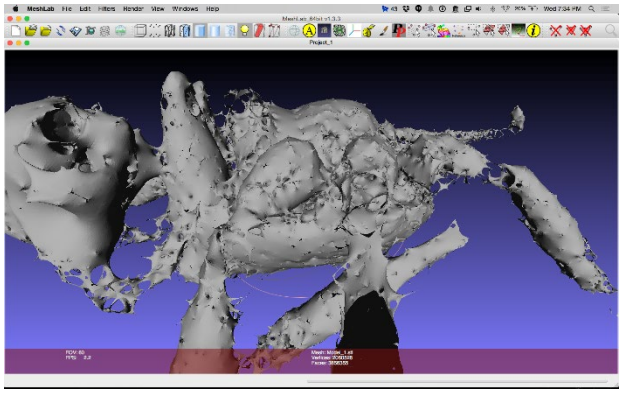

Figure 2. Spider Data Set: surface rendering.

Figure 3. 3D model created using visualization technique developed from spider data set. Photo credit: S. J. Karikó.

Charles presented this work to both DARPA and NIH who viewed it as an advancement in visualization of neuroscience data that may also be applicable to other fields. Additionally, when a teammate needed help, Charles was able to analyze this person's MRI, clean the data and make a handheld 3D model of the affected area of the brain within a weekend, giving the neuro oncology team at Dana-Farber Cancer Institute the opportunity to visualize the area in a new way (Fig. 3).

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References and Notes:

1. Fleming, L., "Perfecting Cross Pollination." *Harvard Business Review*, September 2004, <https://hbr.org/2004/09/perfecting-cross-pollination>, accessed 3 June 2023.

2. L. Leibensperger, "Herbert Walter Levi (1921–2014) and Lorna Levi (1928–2014)," Breviora 551(1): 1–37 (2016), <doi: 10.3099/MCZ28.1>, accessed 3 June 2023.

3. James J. McCarthy, Wayne Maddison, and Gonzalo Giribet, "Herbert W. Levi, 93 - Memorial Minute - Faculty of Arts and Sciences," Harvard Gazette, 8 February 2017, <news.harvard.edu/gazette/story/2017/02/herbert-w-levi-93/>, accessed 3 June 2023

4. Uetz, George W., and Gail E. Stratton. "Acoustic communication and reproductive isolation in spiders." *Spider communication: mechanisms and ecological significance* (1982): 123-159.

5. D.O. Elias, N. Lee, E. Hebets, A.C. Mason, "Seismic signal production in a wolf spider: parallel versus serial multi-component signals". *Journal of Experimental Biology*. 209(6): 1074–1084 (2006), <doi:10.1242/jeb.02104>, accessed 3 June 2023.

6. R. Jocque. "Six stridulating organs on one spider (Araneae, Zodariidae): is this the limit?" *The Journal of Arachnology* 33(2), 597-603 (2005), <doi.org/10.1636/04-107.1>, accessed 3 June 2023.

Caramel Recipe for a Spider Scientist by Chef Yosses:

Ingredients

660g Sugar

680g evaporated milk

1 vanilla bean

280g heavy cream

570g glucose syrup or corn syrup

40 g butter

1 tsp salt

1 tsp anise powder

Method:

1 Combine sugar, evaporated milk, scraped vanilla bean (seeds only), heavy cream in a saucepan.

2 Bring to a boil -- stir constantly.

3 Add glucose-- continuing stirring and heating.

4 Heat to 110C / 230F then add butter.

5 Cook while stirring until mixture reaches 115C / 239F, add salt, remove from heat.

6 Pour onto 12” x 12 “cookie sheet or frame covered with oiled parchment paper.

7 Bang cookie sheet to remove bubbles.

8 Allow to cool to room temperature.

9 Cut into desired shapes using an oiled chef’s knife.

10 Wrap immediately to prevent drying out.

In Memoriam: Joe Warfel

Attendees of the 2025 AAS meeting in Golden, Colorado were saddened to learn that longtime AAS member, Joe Warfel, was gravely ill with lymphoma. We heard the news of his passing on June 17th, a couple of days before the conference ended. Joe regularly attended AAS meetings and could always be spotted with his camera. He was an avid and talented macro-photographer and many of his photos have been used in presentations and publications by fellow arachnologists. Joe always had a smile on his face, a ready laugh, and his camera in-hand. Joe traveled all over the world to photograph arachnids and insects (and the occasional lemur on a recent trip to Madagascar).

Joe was born in Oregon and moved to Massachusetts for employment as a Research & Development machinist and cleanroom technician at MIT/Lincoln Laboratory. He retired around 2022 or 2023, giving him more time to travel the world and focus on photography. His interest in arachnids developed after meeting Herb Levi of Harvard University. Joe was a member of the American Arachnological Society and the British Arachnological Society and remained engaged in the field of arachnology until his death. His outstanding photographs of spiders, Opiliones, and other arachnids were featured in *Natural History* magazine, *Outside* magazine, *AMC Journal*, National Audubon field guides, scientific papers, calendars, and children’s books. They have also been displayed at gallery exhibitions and venues in Harvard and in the National Museum of Natural History in D.C. he traveled all over the world to explore and photograph the smaller fauna of the planet. He will be sorely missed at future arachnology meetings.

Sarah Karikó was able to attend a memorial event held for Joe and wrote: “I thought you would love to know that on a sunny day in a tall white church on the village green in a small New England town, two giant Spiders were suspended out of the windows of the front of the building so we all knew we were in the right place to celebrate Joe. When we entered, there was a table on the right filled with all of Joe's spider t-shirts from four decades of meetings. As you might have guessed, there were spider decorations on every table, and on the memorial table with his photo and ashes, was a steampunk spider that his friends from Lincoln Lab had made. I thought you would like to know that a lot of us will be stepping outside in honor of Joe when Artemis flies towards the Moon as that was the last big project he worked on.”

Reminders for *American Arachnology* newsletter items

News items for the next issue of *American Arachnology* should be sent to the society Secretary by April 15th or October 15th. The newsletters will be posted on the AAS website. You can also follow society news on X and Facebook. And for news-you-can-use about the world of arachnology, consider joining the AAS listserv.