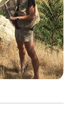
The Beat Sheet

Newsletter of the Frost Entomological Museum
Spring 2020

People

New faces
With the spring came some new faces at the Frost Museum. We are lucky to have 3 awesome undergrads who have started working on different projects with us!

Harleen Takhar is a second year student majoring in Veterinary and Biomedical Sciences. She has been helping us digitize the parasite collection as part of the Terrestrial Parasite Tracker project (See below!). While she intends to become a veterinarian in the future, we are slowly trying to guide her into a career in parasitology.



Antonio Casadei is a fourth year student majoring in Agricultural Science and minoring in Entomology. He came back to the Frost after taking the graduate level Insect Diversity and Evolution course (!) and is also helping with the Terrestrial Parasite Tracker project. He is interested in a career in entomology, and is graduating this spring. Congratulations, Antonio!

Jacob Yentzer is a fourth year student majoring in Biology. He is interested in insects and agriculture, and was previously working at the Student Farm at Penn State. Jacob has been helping us curate the teaching collection and digitize Lepidoptera specimens. He is sticking around for the summer, but will be graduating soon afterwards. Congratulations, Jacob!

Old faces (with new beginnings!)
With mixed emotions, we will soon be saying farewell to Emily Sandall. Emily has been at the Frost for more than 6 years, starting in 2014 as a museum technician and later joining the Deans's lab in 2016 to earn a Phd. Her dissertation research has focused on the mechanics of morphology and systematics of burrowing dragonflies (Odonata: Gomphidae). She has authored or co-authored multiple publications during her graduate studies and has been an active member of the Penn State community. She curated the entire Odonata collection (~65,000 specimens!), and has also contributed to myriad other curatorial tasks. Emily has been offered a post-doctoral position at The Yale Biodiversity and Global Change Center that begins this Fall. We will miss you, Emily!!

Museum science - Working from home

The current state of affairs has required many people to work from home, including us! Wondering how museum professionals work outside of the museum?

Deconstruction of Riker mounted specimens
Although working from home brings its own set of challenges, one positive side of the current situation is that it has provided time to focus on projects that have been repeatedly pushed to the back-burner. One of those projects is extracting and digitizing specimens that are currently stored Riker mounts. The museum holds an interesting collection of Riker mounted butterflies from South America, but unfortunately, this storage system makes specimens incredibly difficult to access. Because of this, they've been inaccessible (until now!) to the scientific community since they came into our care. We estimate there are about 600 - 700 specimens in need of processing. It's a time consuming project, but well worth the effort. Read a little more about it in this blog post!

***Below left**: A subset of Riker mounted butterflies*

***Above right**: Gall rearing apparatuses*

Rearing gall wasps (Cynipidae)
Members of the Frost Museum had previously set up a gall rearing facility on campus to collect gall forming wasps for a number of current projects, including one where Masters student Denise Montelongo plans to use molecular methods to determine whether the *Philonix nigra* species complex is comprised of a single species or multiple genetically distinct species. The galls and associated rearing equipment have been moved indefinitely to Denise's apartment, so she can regularly monitor the galls and collect wasps specimens from emergence. Gall rearing is relatively easy, and can (evidently) be done from your own home! If this sounds like a fun at-home project for you or the family, we have instructions for collecting and rearing galls on our website: https://sites.psu.edu/frost/policies/ (SOP 18).

Digitization
About six years ago we began the process of digitizing our collection. That is, we started capturing information associated with our specimens in a way that makes these data more readily available for research. The locality, date of collection, and collector's name for a particular specimen, for example, which only existed as letters printed on a small rectangle of paper, would be transcribed into a database. In this new form they become available to researchers worldwide, who want to know what we have in our collection and where a particular species is known to occur. With more than 1.3 million specimens in our care, including vials, slide mounts, pinned insects, and other kinds of preparations, the process is complicated.

We've posted detailed workflows on our website, for anyone interested in how we digitize (SOPs 12 and 20–23). These workflows are constantly being refined, but it's safe to say we have learned a lot about how best to capture data about our specimens. We've also learned a lot about the collection itself! The history and stories represented in the collection are quite impressive. We post a few below for your amusement, including some localities that remain a mystery to us.

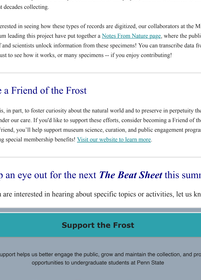
Arizona ghost towns – It's not unusual for collections to have specimens from wild localities in Arizona, including ghost towns. We do have specimens from ghost towns that were collected when those towns were active, though, which I find quite exciting. A tangible connection to another time and place that no longer exists! We have a short series of leaf beetles collected by H. H. Kimball in 1920 in Paradise, for example, and three *Trox sonorae* LeConte, 1854 collected in a place called "Reef" in 1907. Reef later became Palmerlee and then Garces. It is now a long-abandoned mining camp in the Huachuca Mountains. I can imagine the collector, with a six shooter and cowboy hat, dodging bandidos and swinging a net. I still hold out hope that I will encounter specimens from Big Bug, Arizona, another ghost town up in Yavapai county. That would be amazing!

Unusual bait – I don't know if these dung beetles were actually baited, but they were collected in an unusual microhabitat. We have a series of these geotrupid beetles collected by C.A. Thomas in Riverton, New Jersey in the 1920s "under human dung".

Mystery localities in Pennsylvania – Many of our specimens are from localities we can't map. Stuart Frost has a long series of specimens from "Lane, Pa." Was the label meant to read "Kane, Pa.", in McKean County? What about "Holiday, Pa."? Perhaps this is short for "Hollidaysburg, Pa." in Blair County? We also have specimens from "Trout Run" and from "Racoon Creek". There are probably a thousand Trout Runs and Racoon Creeks in Pennsylvania!

This COVID-19-forced isolation has given us more time to explore our database, refine our records, and to estimate latitude and longitude ("georeference") for many of these records. Watch for more histories and mysteries in our next newsletter. In the meantime you can explore our collection at the SCAN website or at GBIF.

Hexapod Haiku Challenge!



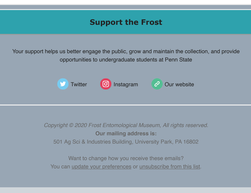
In 2008, during my [Andy Deans] first year as an assistant professor at NC State I was looking for creative ways to engage my entomologist colleagues and maybe connect to entomophiles outside of my circle. I had recently rekindled my interest in poetry and thought that a haiku contest would be fun. The contest ran for six years straight, and by the end we were getting hundreds of entries, from all around the world. It was one of the funnest things I've done as an academic.

Each year I revisit the idea of reviving the contest, and maybe now – 8 years since the last one – is the time to kick it off again. It is National Poetry Month after all, and we are finding time to develop hobbies while avoiding COVID-19. Poetry should be one of those hobbies. So...

We are bringing back the Hexapod Haiku Challenge! Entering is easy: Simply write your haiku about insects (or related arthropods). The Writing Cooperative and this WikiHow page offer reasonable guidance on how to write a haiku. Then email your submission to frost.museum@psu.edu by May 15th at 11:59pm. Don't forget to tell us whether the poet qualifies for the 12 and under or Grown up (older than 12) category. Send as many as you want!

Winners will be selected soon thereafter and their haiku shared on our blog, and awards will be given to the top peets. We can't wait to read your submissions!

Terrestrial Parasite Tracker Project



The Terrestrial Parasite Tracker Project aims to digitize more than a million parasitic arthropod specimens, including those that are important disease vectors in North America. This collaborative effort (26 institutions across the US!) is one of the larger projects that the Frost Museum is currently involved in. The end goal is to make these parasite and host records publicly available to better understand the ecology and evolution of parasites, host relationships, and disease spread in a changing environment.

We are very excited about this project because the previous curator of the museum, K. C. Kim, built a world-class sucking lice (Anoplura) collection that is housed at the Frost Museum, with many specimens that are one of a kind. They will be a unique contribution to this project, and it is wonderful to share the data Dr. Kim spent decades collecting.

If you are interested in seeing how these types of records are digitized, our collaborators at the Milwaukee Public Museum leading this project have put together a Notes From Nature page, where the public can help museum staff and scientists unlock information from these specimens! You can transcribe data from one specimen – just to see how it works, or many specimens – if you enjoy contributing!

Become a Friend of the Frost

Our mission is, in part, to foster curiosity about the natural world and to preserve in perpetuity the arthropod collections under our care. If you'd like to support these efforts, consider becoming a Friend of the Frost. By becoming a Friend, you'll help support museum science, curation, and public engagement programs, all while enjoying special membership benefits! Visit our website to learn more.

Keep an eye out for the next *The Beat Sheet* this summer

If you are interested in hearing about specific topics or activities, let us know!

Support the Frost

Your support helps us better engage the public, grow and maintain the collection, and provide opportunities to undergraduate students at Penn State

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