



PSPP - Plant Science Says

July, 2019

Meetings in the UK

By Matt Lavin, Professor

During the middle part of June 2019, I travelled to Bristol, England, and Edinburgh, Scotland, to attend meetings and participate in a PhD thesis defense. The main meeting took place in Bristol, a vibrant port city in southcentral England, where the University of Bristol hosted the 10th Biennial Conference of the British Systematics Association in Bristol, England. This Association is dedicated to the study and conservation of biodiversity.

Students from all over the world attended and studies focused on planaria and related worms that inhabit soils from Europe, animals that inhabit sea-floor vents, and termites that inhabit the deserts of Namibia. I spoke at a symposium entitled, "Cryptic taxa," that focused on how genetic data has opened our eyes to vastly overlooked levels of biodiversity on land and at sea, and from microbes to plants and



Post-meeting "conferences" in Edinburgh took place at the local pubs and at the ski hill just south of Edinburgh. Here we are skiing the plastic slopes of Hillend. The City of Edinburgh with the hill "Arthur's Seat" and the estuary "Firth of Forth" sit in the background.

animals. After Bristol, I travelled to Edinburgh to attend informal meetings and participate in the PhD defense of Flávia Fonseca Pezzini (University of Edinburgh), a Brazilian student of Dr. Toby Pennington from the University of Exeter (Toby has visited my lab many times, including a sabbatical visit during the winter of 2006-2007). Flávia's thesis represented both a phylogenomic study of one of the tropical deciduous tree genera known as baobabs and a continuation of the "cryptic taxa" symposium. Edinburgh, like Bristol, is a fantastic

place to hold meetings because post-meeting gatherings are facilitated by the abundance of classic pubs, both proper and posh and all within walking distance from meeting places and B&B's. Edinburgh also has many hiking trails and even a year-round ski area that also facilitates post-meeting get-togethers.

Resilience in Global Food Systems: What does it look like?

By Florence Dunkel, Associate Professor

MSU was a major sponsor of the 55th annual conference of the Association of International Agriculture and Rural Development (AIARD). About 100 leaders and future leaders in global food systems gathered in Washington, D.C. June 2-4, to tackle the question of resilience. MSU's delegation was: Dr. Hiram Larew, affiliate PSPP faculty member, co-instructor of AGSC 465R, and retired USDA NIFA Director of the Center for International Programs; Cameron Doran, a pre-vet senior in Political Science, minor in Entomology; and Dr. Florence Dunkel.

The conference opened with AaronR (his name as a poet) reading his "action poem," *Hunger Pains*, which won First Place in the 2018 World Food Day Poetry Competition sponsored by UNFAO. Participants were well-distributed between academia, the private sector (non-profit and for-profit) as well as representatives from career US government positions.

The ability of the food system to respond to shocks at all levels, seemed AIARD participants' consensus on how resilience differs from sustainability. We left the conference pondering: Are investments in building resilience a better bet for the sustainability of human populations and the planet on which we depend? How do issues of working across local, national, regional and global scales impact the resilience in our global food systems? How does building resilience equate to developing self-reliance in our global food systems? And how will we know if we're on track to build resilient food systems for all people, both now and for future generations?

Cam received a full scholarship for her attendance, sponsored by Hiram Larew. Additional sponsors were AIARD, Dunkel, and the office of the MSU College of Agriculture Dean and Vice Provost, Dr. Sreekala Bajwa. Cam, a resident of Hamilton, Montana, was, as far as we know, the first Native American to attend an AIARD conference. In a preconference visit to the Native American Smithsonian Museum, she was pleased to find references to her aunt, the activist Winona LaDuke in the Anishinaabe section. Cam will be a student in AGSC 465R next semester and in spring 2020 the teaching assistant in BIOO 162, the Issues of Insects and Human Societies. Welcome, Cam!

IPM Workshop 2019

By Noelle Orloff

The latest installment of the IPM Workshop happened last week and this time around, we focused on managing weeds in croplands. This annual workshop series is hosted by the MSU Extension IPM team, with topics rotating between plant pathology, entomology, and weed management. This year the workshop was coordinated by Noelle Orloff, Tim Seipel, and Sarah Eilers.

The workshop was attended by a good group and I think we learned a lot from each other. We had a mix of



Fawad Khan, doctoral student in Entomology at the University of Georgia, Florence Dunkel, Hiram Larew, Cameron Doran, and AaronR.



At Fort Ellis, we had the opportunity to look for a rust pathogen being investigated for biological control of Canada thistle.



Participants assessed and discussed herbicide injury symptoms at demonstration plots at the Post Farm.



At Fort Ellis, we discussed cover crop use in Montana and implications for weed management.

agronomists, extension agents, graduate students, pesticide applicators, and agribusiness representatives. The workshop was held over two days. In the mornings of each day we met in the Plant BioScience Building for presentations and discussions and in the afternoons we had a series of field activities and demonstrations at the Post Farm and Fort Ellis. Luckily, the weather was great!

Guest speakers were a highlight of the workshop. Judit Barroso came from Oregon State University to talk about research she has conducted about weed seed control at harvest in small grains using various methods. Another highlight was the cover crop discussion at Fort Ellis. This session was led by Susan Tallman, agronomist for the NRCS, and Bill Curran, retired Penn State University Extension Weed Scientist and affiliate faculty member of the LRES department here at MSU. Many of the participants noted that Dana Berner's talk about biological control of Canada thistle with a rust pathogen was exceptionally informative as well. Dr. Berner joined us as a retired plant pathologist from USDA – ARS.

Our local IPM team and MSU faculty gave presentations on current issues of concern for producers in Montana. Bill Dyer gave us an update on the current status of herbicide resistant weeds in Montana, and Clain Jones and Tim Seipel covered trends in soil acidification and the effects it may have on herbicide persistence and performance. We also heard an update on palmer amaranth and its status in Montana from Jane Mangold. Finally, Tim Seipel and Noelle Orloff led the group in activities and demonstrations about weed seedling identification, herbicide symptoms, and managing perennial weeds in organic agriculture.

Doug Holen - Manager, Foundation Seed Association of Official Seed Certifying Agencies Meeting

The 2019 Association of Official Seed Certifying Agencies (AOSCA) annual meeting just concluded in Chicago, IL. The conference ran from June 23rd through the 26th at the Historic Drake Hotel. This year's Chicago gathering was purposeful in that it marked the 100th anniversary of the organization beginning in the same city in 1919. Thirty-one states represented the U.S. with an additional seven countries attending and nine other seed regulatory representatives.

This is the organization that sets and oversees seed standards nationally. While individual states may set higher standards, these are the genetic purity baselines to ensure every variety seed lot stays exactly as the breeder intended and what the customer expects to purchase. Committee discussions and actions were taken in regard to hemp, peanut/sunflower/cotton, tree/shrub/pre-variety germplasm, corn/sorghum/soybean, grass/alfalfa and small grains. Each of the committees also has a variety review board for consideration of germplasms needing registration or acceptance. The fast pace in which hemp has progressed into a production crop for many states warranted much agenda time and consideration as this group positions itself to stay ahead of that industry's push. Our international colleagues were proven to be very insightful due to their experience on the topic.



AOSCA Director Chet Boruff giving a talk at AOSCA's annual meeting.

A special banquet was held in which past honorees and new inductees with long career paths in the seed protection industry were recognized. General John Borling (a Chicago native) was the keynote speaker outlining his lifelong path as an Air Force pilot focusing on his six and a half years as a prisoner of war in Viet Nam.

Like most conferences, the agenda allows discussion and working progress towards written objectives but it is the breaks and free time during which much is accomplished that is brought home and incorporated into everyday use. Some of that free time included a Cubs game at Wrigley, numerous meals around town, live music featured at local establishments, and 18 miles of recreational area along Lake Michigan.

The 2020 AOSCA meeting is scheduled for Seattle, Washington, followed by Minneapolis, Minnesota in 2021.

2019 NACTA Conference

By Jeff Pashnick, Graduate Student

June 18th through the 21st, a large group of College of Agriculture faculty and students attended the North America Colleges and Teachers of Agriculture (NACTA) conference at the College of Southern Idaho in Twin Falls. In attendance were Dr. Tracy Dougher, Dr. Mac Burgess, Dr. Tony Hartshorn, Dr. Shannon Arnold, Charlie Watt, Jondie Rianda, Colin McClure, and me.

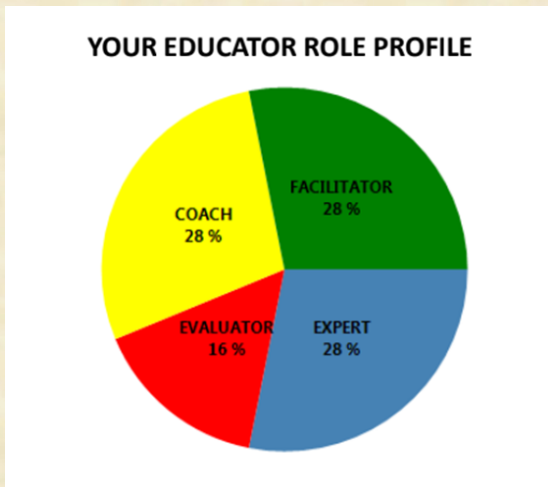
The conference focuses around pedagogy with tons of oral presentations, poster presentations, and workshops all providing excellent information and ideas to incorporate into the classroom. The workshop I attended discussed how to incorporate experiential learning into the classroom by determining how you teach (through this survey which I highly recommend you take and learn from: [survey.learningfromexperience](https://www.surveymonkey.com/survey/learningfromexperience) (my results are below left) and ways to modify how you deliver information to the different ways students learn. For my breakdown, if a



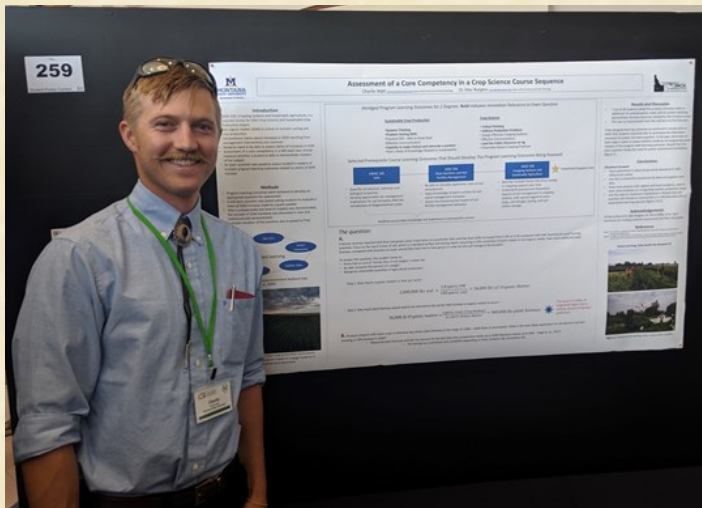
MSU crew at conference barbecue. Bottom row, left to right: Tracy Dougher, Mac Burgess, Shannon Arnold. Top row left to right: Jeff Pashnick, Jondie Rianda, Charlie Watt, Colin McClure, and Tony Hartshorn.

student is just taking a course as a means to an end (e.g. a certification) my teaching style may not be the best for them with my lowest category being an evaluator at 18%. I can then take that information and modify critical pieces of the course to better teach and prepare those students. Assessment was another major topic of talks and posters (see photo lower left). Not pictured is Tony enthusiastically discussing his student Kirby's poster on using a Punnett square framework to evaluate questions.

As with most conferences, the academic side of the conference was combined with a little fun as well, and the Magic Valley was a perfect location for that. Mac, Charlie, and I all learned about irrigation in the otherwise very dry area. While experiencing the Snake River part of the irrigation in the valley, Mac and Charlie avoided having to listen to me teach them about aquatic plants by watching BASE jumpers off the bridge in Twin Falls. Tracy, on the other hand, learned about the production of Clif bars and Chobani, but wouldn't tell us anything as she was sworn to secrecy post tour...



A breakdown of Jeff Pashnick's teaching style from the workshop on experiential learning.



Charlie Watt and his work on assessment in the crop science courses.

The conference closed with a banquet on the cliff over the Snake River. Tracy received the Murray Brown Leadership award through NACTA for her past and present leadership roles in the organization and for bringing so many students and faculty into it. I also received an award for excellence in teaching as a graduate student. Overall the conference was filled with great ideas and methodologies to improve the effectiveness of teaching and I look forward to attending again in the future.



Charlie Watt and Jeff Pashnick paddleboarding on the Snake River watching BASE jumpers.



Vinicius Ferreira in the Natural History Museum, London.

My Quest for Beetles - Europe 2019

By Vinicius Ferreira, Graduate Student

During the first three weeks of June, I had the opportunity to visit several important scientific collections in France, England, and Poland. The goal of these visits was to find rarely studied and undescribed species of squishy beetles of the families Lycidae (net-winged beetles), Omethidae (false soldier beetles, Long-lipped beetles) and Cneoglossidae. The visit to these institutions allowed the collection of data for future phylogenetic analysis and taxonomic studies that will result in the descriptions of dozens of new species and a better understanding of how these groups of beetles evolved. In addition to the permanent hunt for new species in museums and institutions, visits to these collections provide the unique opportunity to study type specimens (the specimen, or set of specimens on which the description and name of a new species is based) and a chance to examine organisms from places that no longer exist or organisms that are extinct.

Among the highlights of this trip are the visit to the monument to Jean-Baptist Lamarck, in the Jardin des Plantes in Paris, and the unique opportunity of holding a lycid specimen that was collected by Alfred Russel Wallace himself while he was in Sarawak. More photos of this trip and other



*The circular label, SAR (Sarawak), is Alfred Russel Wallace's handwriting. The specimen was collected by Wallace and later became the type specimen of *Xylobanus humilis* Waterhouse. The specimen is permanently deposited in the Natural History Museum, London.*

adventures are available in my website <https://cantharoid.com/blog/>.

New Employees

MaryEllen Dietz-Holmes - Research Associate for David Wheeler

At an early age growing up in Connecticut, I was obsessively interested in anything having to do with science including plants, bugs, ponds and stuff, growing my own



MaryEllen Dietz-Holmes

gardens and planting flower beds. I was awestruck by the giant white pines that grew throughout the eastern forests. This love of plants led me to a botany degree at the University of Maine with a strong desire to work with trees. During my brief time in an

associate position with the College of Environmental Sciences and Forestry in Syracuse, I wrote a black cherry tree improvement plan that was eventually adopted by the state of NY. I hopped back to Maine to complete my Masters in plant pathology working on Dutch Elm disease.

From there, I followed my future husband to Bozeman, where I landed a position with the USDA as a technician breeding disease resistant wheat. The USDA lab, as part of a restructuring, decided to relocate to Sidney Montana, but we fell in love with Bozeman, the area, the climate and the outdoor recreational opportunities it provided. We kept the small house we began building on 20 acres. With two young family members we did what we could to come back to Bozeman. I retrained as an accountant and worked for Montana PBS while raising our boys, but my desires and fascinations were always with science, with plants, and with growing things and I'm excited to return to crops and fields where I feel at home and can make a contribution.

Grants

Mary Burrows, Montana Wheat and Barley Committee, "Testing winter wheat breeding lines for resistance to Wheat streak mosaic virus".

William Dyer, Montana Wheat and Barley Committee, "Determining the source(s) of glyphosate contamination on Montana crops".

Jennifer Lachowiec, Montana Wheat and Barley Committee, "Plant Steroids for Montana Small Grains Disease Resistance".

Michael Ivie, Montana Department of Agriculture, "Exotic Woodborer and Bark Beetle".

Yellowstone County Master Gardener Program celebrates 25 years
By Dara Palmer, Master Gardener Coordinator



On May 18, 2019 at Billings MetraPark, over 70 Master Gardeners gathered to celebrate the 25th anniversary of the Montana Master Gardener program in Yellowstone County.

Amy Grandpre, the Yellowstone county Horticulture Assistant, has been there since its inception and provided a brief history of the program:

The Yellowstone County Master Gardener Program started in 1994 with a total of 9 participants interested in learning more about how to grow yard & garden plants successfully. There were 6 training sessions all delivered via MetNet video teleconferencing. This was one of several sites set up across the state to host the first Master Gardener classes. That first year, students learned about Composting, Insect ID, Soils & Fertility, Urban IPM, Plant Disease and general Horticulture; all taught by MSU Extension and Plant Sciences/Plant Pathology staff. Participants were, and still are, required to volunteer in addition to the classroom environment and in 1994, 43 volunteer hours were logged through answering horticulture questions for the county Extension office, a plant exchange and a potluck event with Master Gardener hosted garden tours.

Fast-forward 25 years and the Yellowstone County Master Gardener program has over 130 active participants taking part in an

average of 25 volunteer projects throughout the county. Such projects include: maintaining the Zoo Montana and Moss Mansion Gardens, three Habitat for Humanity Community Gardens, the Billings Public Library Adult and Children's Education Program, the MetraPark Education Center Gardens, Greenhouse and Demonstration Garden and information booths at the Montana Fair and Billings Farmer's Market, just to name a few. Hundreds of students have gone through the program since 1994 with a recorded total of over 75,000 volunteer hours!

Recognition and awards were given to many Master Gardeners in attendance for their achievements within the program and a moment of silence was shared for those who have passed. The celebration wrapped up with the long-awaited dedication of a newly planted Mock Orange tree to honor the late Dr. Robert Gough who was instrumental in guiding the Montana Master Gardener program to what it is today.



Yellowstone County Horticulture Assistant, Amy Grandpre, presenting the dedication plaque for the memorial tree in honor of Dr. Bob Gough.

Recipe of the Month

Mediterranean Turkey Burgers

Courtesy of foodnetwork.com

- 1 7-ounce container 2% plain Greek yogurt (about 3/4 cup)
- 1/3 cup crumbled feta cheese (about 2 ounces)
- 1 Persian or Kirby cucumber, grated



- 2 tablespoons chopped fresh mint
- 2 cloves garlic, grated
- Kosher salt and freshly ground pepper
- 1 1/4 pounds lean ground turkey
- 2 tablespoons extra-virgin olive oil
- 4 sesame hamburger buns or potato rolls, split and toasted
- Lettuce and tomato slices, for topping

Combine the yogurt, feta, cucumber, mint, half of the garlic, 1 tablespoon water, 1/2 teaspoon salt and a few grinds of pepper in a small bowl. Refrigerate until ready to serve.

Combine the turkey, the remaining garlic, 1 teaspoon salt and a few grinds of pepper in a medium bowl. Form into four 1/2-inch-thick patties. Heat a large nonstick skillet over medium-high heat. Add the olive oil, then add the patties and cook until browned and cooked through, 4 to 5 minutes per side. Transfer to a plate.

Spread the yogurt sauce on the buns. Sandwich with the burgers; top with lettuce and tomato. Serve with potato chips.

July Birthdays

Jinling Kang	1
Collins Bugingo	1
Mary Burrows	7
Mina Botros	7
Andy Hogg	8
Jack Riesselman	9
Alex McMEnamin	24

