



**Aquatic Plant Management Society  
Annual Conference  
By Paula Guastello**

The Thum Lab had a great week at the Aquatic Plant Management Society's Annual Conference in Daytona Beach, Florida, July 16-20. Dr. Thum received the Outstanding Research and Technical Achievement Award for his research on issues related to the detection of hybridity in invasive watermilfoils. He was also recognized for his dedication to graduate student education and the aquatic plant management industry overall.



*Dr. Ryan Thum receiving the Outstanding Research and Technical Achievement Award.*

At the beginning of the conference, we were also excited to see that examining genetic variation between Eurasian and hybrid watermilfoil is now listed in the top research priorities of the society. For years, genetic differences between and within the taxa were

not considered when making management decisions. Dr. Thum has been one of the key pioneers bringing attention to how genetic variation in watermilfoil can affect growth rate and response to herbicides.

Dr. Thum and I both gave presentations on what we have been working on this year and received thought-provoking feedback and questions from the audience. I presented "Eurasian and hybrid watermilfoil response to endothall in Jefferson Slough, Montana." Dr. Thum's two presentations were entitled "Introduction and spread of a cryptic water chestnut species in the northeastern United States," and "How do we identify high-risk genotypes for adaptive management of Eurasian and hybrid watermilfoil?"

After the conference, graduate students were taken on a guided tour of Lake Tohopekaliga



*Graduate students taking a tour of Lake Tohopekaliga.*

("Toho"), near Kissimmee, Florida, to learn about the factors that go into management decisions and the valuable resources that Florida waterbodies contribute to the state. "Toho" is critical to the Florida economy, bringing in hunters and anglers every year to take advantage of its plentiful waterfowl and bass. It also plays a key role in flood management, as does the entire Kissimmee River system.

It was fantastic exploring a completely different ecosystem from the lakes we work on in Montana and hearing about previous management plans used in Lake Toho. Apparently, alligators live in the lake, but unfortunately, they weren't out while we were there! I was impressed to see the students so engaged in the tour and excited about the plants they got to see – many were taking pictures of each taxon to show their advisers back home.

This was my first national conference, and the first time I had spent much time with aquatic plant graduate students outside of our lab. Between beach trips, dinners, and our field trip to Lake Toho, I really enjoyed spending the week with such friendly, intelligent students with great enthusiasm for the aquatic plant management industry. I wasn't expecting to be so sad to leave!

The Aquatic Plant Management Society was incredibly generous, covering the hotel bills and conference registration for each student, providing wonderful catered meals, and taking students on the field trip to Lake Toho. I am so grateful for their dedication to engaging students and providing us a way to attend conferences. It was clear to see that members of the society with more experience were excited to share their knowledge with students and took interest in the students' research and presentations.

Ryan and I are excited to continue working with other society members on issues facing aquatic plant managers. The conference served as a great motivator to

pursue our research interests in earnest and share our ideas with other professionals and researchers. I wholeheartedly look forward to attending more Aquatic Plant Management Society events in the future.

### **Advanced Diagnostics Workshop By Jessica Rupp**

Jessica Rupp and Mary Burrows hosted an Advanced Diagnostics Workshop July 10-11 at MSU-Bozeman. The class had 24 participants including county agents, certified crop advisors, and representatives from industry. The workshop kicked off with a drone demonstration by Jessica and Myron Bruce followed by field scouting, led by Mary. Participants were able to scout a chickpea field near Amsterdam belonging to Carl Vandermolen. Field scouting then moved onto the Post Farm where wheat, barley, and pulse crops were examined. The afternoon session kicked off with preparation of field samples for later diagnosis. Doug Jardine, Extension Row Crop Pathologist from Kansas State was the special guest, speaking about bacterial diseases, followed by EARC pathologist Frankie Crutcher and a talk on fungi. Shabeg Briar spoke about nematodes, Jessica spoke about viruses, and Susie Siemsen gave a tour of the Potato Lab, which is in full swing with summer testing.

Participants enjoyed a wonderful dinner at 14 North, with a keynote address by Doug Jardine and drinks graciously provided by Clark Schmidt of BASF.

The second day focused on epidemiology and technology. Though recently retired, Barry Jacobsen returned to give a talk on fungicides and their modes of action before flying out to Alaska. Mary gave an introduction to epidemiology and led an interactive exercise describing pathogen spread. Weather models and online resources were addressed in a discussion format. Nilam Patel, from MSU's social media department gave a brief description



*Participants scout for field diseases at the Post Farm.*



*Advance Diagnostics Workshops included preparation and diagnosis of diseased samples collected in the field.*

on the power of social media for business. Following lunch, participants were given time to revisit their samples from the previous day, as well as examine samples prepared by Mareike Johnston. Prashant Jha, from SARC, gave a presentation on herbicide resistant weeds and new breakthroughs at MSU to end the workshop. A special thank you goes to Eva Grimme and Sarah Eilers for their work in the planning process. Another workshop is already in the works for 2019 with an emphasis on Integrated Pest Management.

### **Flenniken named Advisor**

Michelle Flenniken is now a Scientific Advisor for Project Apis m. - a non-profit organization that supports honey bee

research. For more information go to <http://www.projectapis.org/pam-newsletter.html>

### **Towne's Harvest Garden President's Lunch By Elisa Boyd**

Towne's Harvest Garden, located on MSU's Horticulture Farm, is comprised of about three acres of diverse vegetable production and cover crops. This research and teaching

farm offers community supported agriculture (CSA) shares, two farm stands, and donates produce to the Gallatin Valley Food Bank.

Every year Towne's Harvest Garden hosts the President's Lunch in the grove of the Farm. Students from the Sustainable Foods and Bioenergy Systems Summer Practicum and Culinary Marketing classes collaborate to bring dishes made from local ingredients and produce grown at Towne's Harvest to the table for faculty and staff invested in the SFBS program. In attendance this year were MSU's President Waded Cruzado and Governor Steve Bullock. A sample of dishes highlighting produce grown on site included: fava bean humus, spring rolls,

kale salad, carrot gajar halwa, and zucchini ginger cookies. Students also put together arrangements for the tables from flowers grown on the farm.

Students in the SFBS summer practicum spend over ten hours each week on the Farm engaging in daily farm activities. By the end of the course, students understand safe harvest and handling procedures, production concepts including crop variety selection, weed identification and management, and soil fertility management. Students in both the practicum and culinary marketing participate in the weekly CSA distribution and two farm stands. Culinary marketing students focus on preparing and preserving seasonal produce.



*President Waded Cruzado and guests.*

We welcome everyone to come out and



*President's Lunch in the grove of the Horticulture Farm.*



*Culinary Marketing students with the dishes they prepared.*



*Governor Seve Bullock with lunch guests.*

visit Towne's Harvest Garden and see the hard work these students have put in over the summer.

### **New Employees**

Derek Lewis (Kevin McPhee)



Recently, I started working for Kevin McPhee as a Research Associate. I have a B.S. in Statistics and an M.S. in Agricultural Production from the University of Illinois and before I came here, I was working at the University of Illinois on sorghum and corn.

It is great to be in Bozeman with so many outdoor activities to choose from. In my free time, I play hockey and enjoy the outdoors with my wife, Katrina, and my dog, Wendell.

Marie Pizzomo (Michelle Flenniken)



Dr. Marie Pizzorno will be spending the upcoming year in the laboratory of Dr. Michelle Flenniken. Marie is an Associate Professor at Bucknell University, located in Central Pennsylvania, about

a 90-minute drive east of Penn State University. Bucknell is primarily an undergraduate college with about 3400 students and Marie is heavily involved in teaching during the academic year. She also directs a lab of undergraduates working on Deformed Wing Virus (DWV), which infects the European Honey Bee.

After meeting Michelle at a Pollinator meeting at Penn State last July, she thought

spending her sabbatical working in Michelle's lab would be both intellectually and personally worthwhile. She plans to learn new techniques for infecting bees and quantifying the pathogens that can infect the bees as well as expanding her knowledge of insect immunity. She also hopes to assist the Flenniken lab with their molecular studies of LSV2.

Marie is enjoying living in Bozeman with her husband Tom Simpson and her Australian Shepherd Darwin.

### **New Graduate Student**

Rebecca Pomales Orlando



Hello, my name is Rebecca and I will be pursuing a Ph.D. in Plant Genetics in Mike Giroux's lab. I received my Bachelor's in Biology and my Master's in Science Education from the University of Central Florida. I am so excited

to be here and feel blessed to have been given such an amazing opportunity to further my education in such an idyllic place. This is a dream come true and my goal is to use my knowledge and skills for a purpose greater than myself.

### **Grants**

Mary Burrows, "AWaRe: A Decision Tool For Assessment Of Wheat Streak Mosaic Risk" USDA NIFA, 7/1/17-6/30/20

### **Publications**

Xiaojing Wang, Yaru Wang, Peng Liu, Yan Ding, Xiaoqian Mu, Xiping Liu, Xiaojie Wang, Mengxin Zhao, Baoyu Huai, Li Huang, Zhensheng Kang, "TaRar1 Is Involved in Wheat Defense against Stripe Rust Pathogen Mediated by YrSu", *Front. Plant Sci.*, 14 February 2017 <https://doi.org/10.3389/fpls.2017.00156>

Vinicius Ferreira, Michael A. Ivie, "The First Fossil Species Of The Extant Genus *Cessator* Kazantsev (Coleoptera: Lycidae): A New Leptolycini From Dominican Amber ",

*The Coleopterists Bulletin* 71(1):57-60. 2017.

Michael A. Ivie, Charles J. Hart, "The Identity of *Uloma guadeloupensis* Marcuzzi (Coleoptera: Tenebrionidae: Ulomini, Diaperini)", *The Coleopterists Bulletin* 71 (1):116-117. 2017

Jasline Deek, Batsheva Ben-Zvi, Gil Ben-Zvi, Axel Himmelbach, Ron P MacLachlan, Andrew G Sharpe, Allan Fritz, Roi Ben-David, Hikmet Budak, Tzion Fahima, Abraham Korol, Justin D Faris, Alvaro Hernandez, Mark A Mikel, Avraham A Levy, Brian Steffenson, Marco Maccaferri, Roberto Tuberosa, Luigi Cattivelli, Primetta Faccioli, Aldo Ceriotti, Khalil Kashkush, Mohammad Pourkheirandish, Takao Komatsuda, Tamar Eilam, Hanan Sela, Amir Sharon, Nir Ohad, Daniel A Chamovitz, Klaus FX Mayer, Nils Stein, Gil Ronen, Zvi Peleg, Curtis J Pozniak, Eduard D Akhunov, Assaf Distelfeld, "Wild emmer genome architecture and diversity elucidate wheat evolution and domestication". *Science*: 357; 6346:93-97

Fazileh Esmaeili, Behrouz Shiran, Hossein Fallahi, Neda Mirakhorli, Hikmet Budak, Pedro Martínez-Gómez, "In silico search and biological validation of microRNAs related to drought response in peach and almond", 2017. *Functional & Integrative Genomics*: 189-201.

Hikmet Budak and Boaghang Hang, "MicroRNAs in model and complex organisms". 2017. *Functional & Integrative Genomics*, 1-4.

Laura M. Brutscher, Katie F. Daughenbaugh and Michelle L. Flenniken, "Virus and dsRNA-triggered transcriptional responses reveal key components of honey bee antiviral defense"; *Scientific Reports* 7; Article number: 6448. July 25, 2017.

Jonathan K. Hilmer, Sezgi Biyiklioglu, Hikmet Budak, William E. Dyer, "Intensive herbicide use has selected for constitutively elevated levels of stress-responsive mRNAs and

proteins in multiple herbicide-resistant *Avena fatua* L." Pest Management Science DOI: 10.1002/ps.4605. May 2017.

Strobel, G.A., Ericksen, A., Sears, J., Xie, J., Geary, B., and Blatt, B. (2017) "Urnula sp. An endophyte of *Dicksonia antarctica*, making a fragrant mixture of biologically active organic compounds". Microbial Ecology 74: 312-321.



*Bryce Canyon National Park, Utah on an early spring day. Areas of this Park along with many other areas in the desert area of western United States contain black crusted soils. These crusts represent intricate associations between soil particles, fungi, cyanobacteria, lichens, green algae and bryophytes and commonly appear as a spotted or a more complete black crust on the upper few millimeters of the soil. They are found in all dryland regions of the world including the dry lands of the Antarctic. The photo shows a panoramic view of Bryce Canyon. Photo courtesy of Gary Strobel.*

## **Unwanted Porch Visitors**

**By Laurie Kerzicnik**

### **Associate Extension Specialist**

This time of year we are having unwanted guests visiting us for dinner on our deck. Most of these wasps are Western yellow jackets. They are the biggest nuisance pest this time of year around our backyards and porches. Although other wasps and bees can sting, most of our stings come from the Western yellowjacket. Other common wasps



*Upper left moving clockwise: Western yellowjacket, Vespula pensylvanica. Photo by Alice Cavette, Figure 2. Bald-faced hornet, Dolichovespula maculata. Photo by Sharon Warner. Figure 3. European paper wasp, Polistes dominula. Photo by Scott Taylor. Figure 4. Aerial yellowjacket, Dolichovespula arenaria. Photo by Kurt Hennige.*

are the baldfaced hornet, the aerial yellowjacket, and the European paper wasp. Most are beneficial and feed on a lot of our garden pests. The Western yellowjacket is a scavenger, so it feeds on garbage, anything you eat on the backporch, and dead insects.

The wasps are difficult to control this time of year. This is because, by the end of the summer, there can be several hundred to thousands of wasps in each of these nests. The nest can be the size of a basketball (in the case of the baldfaced hornet). If you spot a nest, you can use a wasp or hornet spray on a cold morning or evening when the nest is not very active. Western yellowjacket nests can be subterranean or in wall voids and are difficult to find. If controlling a Western yellowjacket nest, this might require several applications. Never plug what you think might be a Western yellowjacket hole on the outside of the house; this might force them to move further into the house. Western yellowjacket traps are available but have to be put up in early spring when populations are very low. Also, make sure to clean out your grease trap on your grill occasionally.

Nests of all the wasps will be abandoned in late summer, and only the queen and fertilized females will survive. They will find another place to overwinter and will start a colony elsewhere the following spring. After a couple of serious frosts and cold weather, you can knock down the paper nests, as the worker wasps inside will be dead.

**International Master Gardener Conference  
By Dara Palmer,  
Montana Master Gardener Coordinator**

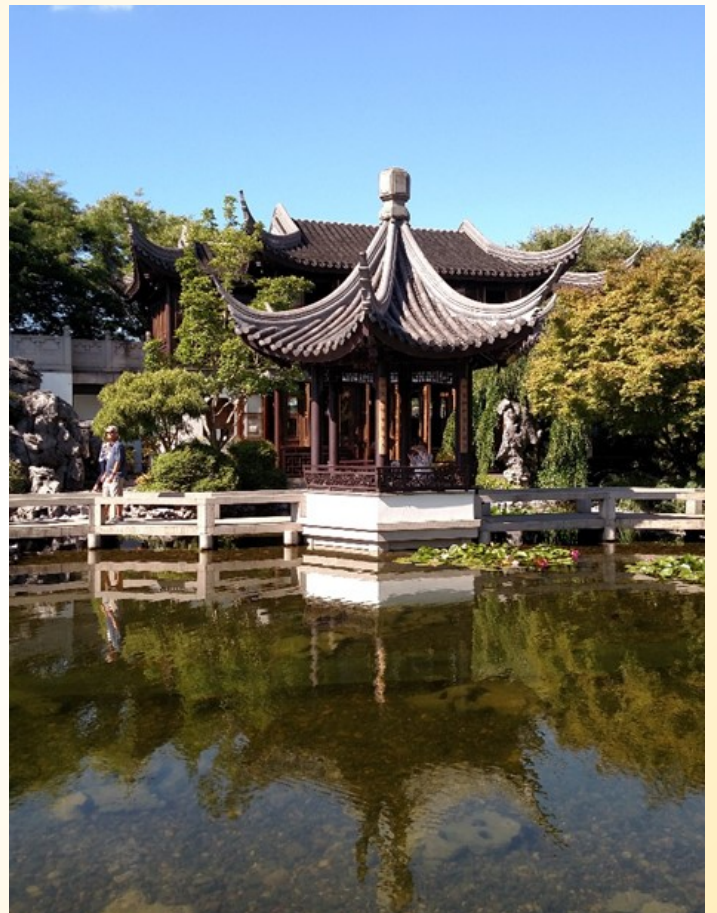
During the week of July 10, Toby Day, Extension Horticulture Specialist, and I attended the 2017 International Master Gardener Conference in Portland, OR. The IMGIC is held every other year and is open to Master Gardeners, Extension agents and Master Gardener state and county coordinators. There were representatives from the United States, Canada, and the UK, including seven Master Gardeners from Montana!

The five-day long conference was packed with amazing tours (as well as pre-and post-tours), seminars on a variety of subjects including: Full Frontal Gardening (not hiding your veggies in the back yard), Weedless Gardening (as if), Diagnosing Plant Problems, How to Prune and Renovate Overgrown Gardens, Honey Bee Health and several plant specific talks on things like houseplants, clematis, and berries. One of the most informative speakers was Jim Todd of the Oregon Museum of Science and Industry. He spoke about what to expect before, during, and after the upcoming total solar eclipse. For some great eclipse info visit: <https://www.greatamericaneclipse.com>.

The one tour I was able to attend was the Three Iconic Gardens tour which included the Portland International Rose Test Garden, the



*Conference attendees at the International Rose Test Garden, Portland, OR*



*Moon Locking Pavilion-Lan Su Chinese Garden*

Japanese Garden and the Lan Su Chinese Garden. The rose garden was amazing; we didn't have a lot of time there but I tried my hardest to stop and smell as many of the roses as I could. This is the oldest continuously operated public rose test garden in the United States, featuring over 10,000 test roses. It was a bit overwhelming.

The Japanese Garden is just up the hill and very tranquil. Very little, if any, of the plant material flowers. Primarily green, the plants are defined through texture and shape. See for yourself by experiencing the garden here: <https://japanesegarden.org/garden-spaces>.

Lastly, we toured the Lan Su Chinese Garden which, unexpectedly, is right in the middle of downtown Portland. Once inside the garden walls you can hardly hear any of the noise of the city. Better yet, take a virtual tour here: <http://www.lansugarden.org/about-the-garden/virtual-tour> and you never have to leave your chair.

The next International Master Gardener Conference is planned for June 15-21, 2019 in Valley Forge, PA. I'm sure it will not disappoint. These conferences are not only super fun but very educational. If interested in learning more, please visit: <http://internationalmastergardener.com>.

### August Birthdays

Nancy Cooke	12
Nar Ranabhat	12
Mike Ivie	16
Karen Maroney	23
Bright Agindotan	25
Ruth O'Neill	26
David Sands	30



### Recipe of the Month

#### Raspberry Lime Iced Tea

5 bags raspberry zinger tea  
6 cups water  
1 c sugar (or to taste)  
1/2 pint raspberries  
1 lime, cut into wedges  
Mint springs



Put the tea bags in an 8-cup measuring cup or heat safe bowl. Boil the water, pour it over the tea bags, and allow to steep for at least 10 minutes. Allow to cool and remove tea bags. In a small saucepan combine the sugar and 1 cup water and bring to a boil. Cook briefly until sugar is dissolved. Remove from heat

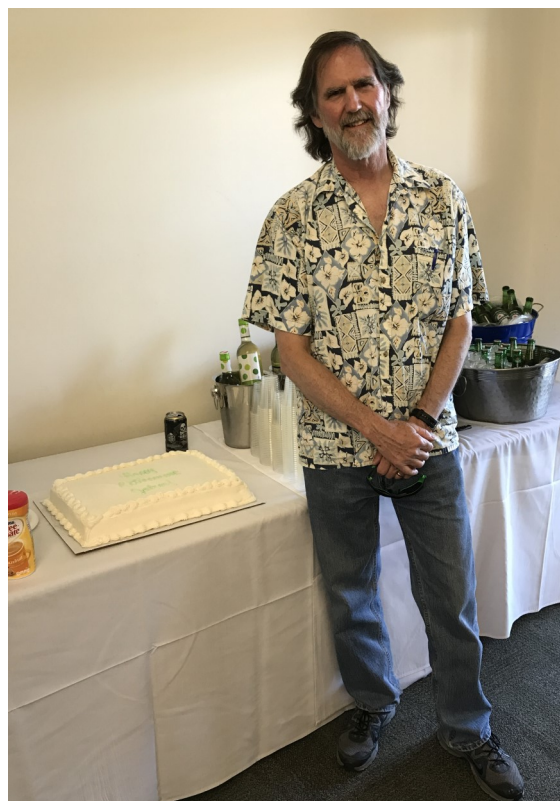
and add raspberries. Let come to room temperature.

Combine the tea and raspberry sugar syrup, to taste. Put ice into 4 (12-ounce) glasses. To each squeeze in a wedge of lime, pour sugared tea over, and garnish with a sprig of mint.

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**Go to next page for John Sherwood's Retirement Party.**





*Retirement*



*Happy*



*John!*

*Sherwood Retirement Party 6/30/17*

