



A Sabbatical in The Netherlands By Mark Young, Professor

'Hoi' is 'hello' in Dutch. This is just one of the basic things you learn when doing a year-long sabbatical in the Netherlands (and NOT calling the country Holland... which is only a region within the Netherlands... is another). Even though I have travelled extensively for my work to Europe over the years, it was certainly a pleasure to actually live in Europe for the past year. I was based at Wageningen University and Research (WUR) which is about 45 minutes east of Amsterdam (and by Dutch standards this means on the other side of this small country). WUR is the UC Davis of the Netherlands and it has a long and distinguished history of agricultural research. I was housed within the Microbiology

Department which is comprised of about 15 faculty, 30 PhD students, and 60 master students. I took this opportunity of being away from my lab and all of the meetings at MSU to focus on actually doing research. I decided to try something crazy... or at least scientifically very risky ... to build the first synthetic virus. This is a project that I have always wanted to do... and here was my shot at going for it. You may ask why do such a project? There are lots of great reasons; come to one of my seminars and I will tell you. I teamed up with a great computational chemistry lab at UW-Seattle (David Baker lab), who did the computational design of new viral like proteins that nature has never created. I focused on engineering these new genes/proteins into a replicating system... just like a virus. To my great surprise it looks like it is working...at least phase one of the project.

The great advantage of being on sabbatical is the time you get to think about your research and to actually do experiments. I purposely shared a room and the lab with the departmental graduate students which made for lots of fun conversations and jokes about the 'old guy' in the lab. While I cannot say that I am a fan of Dutch popular music, I do like their coffee and sweets... we as Americans have a lot we can learn from our European friends.



Winter fun at the Rijksmuseum, Amsterdam.

Of course... it was not all work. My wife, Linda, and I managed to have a lot of fun too. This included partaking in European cultural delights such as visiting numerous art museums, fine dining, and more than our fair share of sampling European wines. We greatly enjoyed the Dutch biking culture... riding a bike everywhere; rain or shine. We also enjoyed joining in some strange Dutch traditions such as jumping into the (very cold) North Sea on New Year's Day with thousands of other crazy Dutch people and of course we had to go ice skating. Add in trips to Norway, Germany, Ireland, France, Italy, and even the Sinai ...and it's not a bad way to spend a year, both professionally and personally.

Emma Jobson, PhD Graduate Student, Wins Award

Recently Emma Jobson (advisor Mike Giroux) attended the 2018 Cereals and Grains meeting in London. While there, she won first place in the 2018 Best Student Paper competition. Following is an article about her experience at this meeting.

"In early October, I had the opportunity to attend the 2018 Cereals and Grains meeting in London, England. This meeting brought together a diverse group of attendees from academia, government, and industry. Each day of the meeting focused on a different theme: Genes to Grain, Safety and Quality Management, and Human Nutrition. Additionally, throughout the meeting, there were workshops which were designed to help researchers and technical specialists present complex information in a manner that was accessible and interesting to the general public.

Some of the other topics covered throughout the week included the need for an international definition of 'whole grain', underlying causes of non-coeliac gluten intolerance, and if our breeding efforts to increase yield have negatively impacted the nutritional quality of wheat. It was interesting to hear the perspectives of

researchers on these presentations from all over the world, and what the primary goals for each country were.

Finally, I had the opportunity to present my research as part of the 2018 Best Student



Emma Jobson won first place in the 2018



The Tower of London on a rare sunny day!

Paper Competition, and was lucky enough to win first Place. In addition to the Student Paper Competition, graduate students presented their work for the Student Research Leadership Program, and as part of the Student Product Development Competition.

Overall, the meeting was a great learning and networking experience.”

Congratulations Emma!

Vinicius Ferreira, PhD Graduate Student, Wins Award



Recently, Vinicius Ferreira, (advisor Mike Ivie), won the Science as Art Contest 2018. The College of Agriculture started the competition in 2015 as part of Celebrate Agriculture. His artwork will be on display at the November

10 brunch at 10:30 a.m. in the SUB ballrooms.

Vinicius Ferreira states, “The creature depicted in this photo is an adult male beetle from the family Lycidae, known as net-winged beetles, and it belongs to the species *Leptolycus (Baholycus) flavoapicalis* Bocak. This image is the result of four hours of work, and a perfect example of how science can also be interpreted as art: 43 photos of this tiny specimen (the specimen is about 5mm long) were taken with a Canon T3i DSLR using an MP-E 65 mm lens and stacked and aligned using the software Zerene Stacker; the final image was edited in Adobe Photoshop and Adobe Lightroom. Beetles are the largest of groups of animals on Earth, where one in every five living animal species is a beetle. The species in the photo belongs to a rarely seen and poorly studied group of beetles within the family Lycidae, the tribe Leptolycini, subject of my PhD studies. Beetles of this group are in South and Central America and in the West Indies and they are unique among other groups of beetles: Adult males (like the one from the photo) have wings and the



Adult male beetle from the family Lycidae, known as net-winged beetles and it belongs to the species Leptolycus (Baholycus) flavoapicalis Bocak.

ability to fly, a pair of long antennae and the general appearance of a beetle; adult females,

on the other hand, are completely different from the males: They are worm-like creatures, have no wings and live in the ground, among leaf litter. Based on individuals Leptolycini kept in the Montana Entomology Collection, one of the largest collections of beetles from the West Indies in the World, I am in the process of describing over 130 new species of Leptolycini, reconstructing their evolutionary history using morphology and DNA data and trying to understand why these beetles have such a unique biology.”

Congratulations Vinicius!

Landscape Design Program Travels to Yellowstone National Park
By Jennifer Britton, Associate Professor
Landscape Architecture has had an instrumental role in both the establishment in



Landscape design students under the arch going into the north entrance of Yellowstone National Park. The arch states, "For the Benefit and Enjoyment of the People".



James Pritchard, Landscape Design Instructor, acted as our tour guide.



Landscape Design students at Mammoth.



Jennifer Britton, Associate Professor, and Rebecca VanWieren, Assistant Professor, at Canyon in YNP.



National Park Service staff Doug Madsen, Zehra Osman, and Erik Ackley gave informative talks on the landscape design projects in the Park, past and present.

the passage of the National Park Service Organic Act, which established the agency in 1916, and subsequent development of

the National Park System. From historic monuments to national parks and sites, designed landscapes choreograph visitor's movement and define the pace and sequence of much of their experience. Considering the long-standing relationship our profession has with the National Park System and our proximity to Yellowstone National Park, the

first national park in the U.S., we embarked on an inaugural program visit to the Park.

With the support of PSPP and the College of Agriculture, and in coordination with YNP staff, we started planning for our excursion in the Spring of 2018. After juggling logistics such as faculty, student, and Park staff schedules in addition to transportation, food, and funding; we took 22 landscape design option students and four faculty myself—Rebekah VanWieren, James Pritchard, and Chris Keil on Thursday, September 27th to experience first-hand Yellowstone projects and sites.

We departed campus on our Karst Stage bus with our friendly driver Kirsten at 6:45 a.m. to Gardiner, Gateway's newly designed and rechanneled entrance. The needed facelift better directs tourists and subsequent traffic. We explored and walked through the Roosevelt Arch and experienced the inside that has been closed since the mid-1970's. Each faculty had special focus activity and questionnaires during the day to tie experience into class curriculums. Mine was color, color, and more color. Perfect timing as poplars glowed with autumn light.

We had some time to spare so we stopped at Mammoth Hot Springs to allow students to stretch their legs and explore, reminding them that, while in the Park, animals don't want hugs and the water is VERY HOT. Hey, safety first.

We met with Park staff at 9:00 a.m. at the Mammoth Community Center, a classic mid-century building that used to function as an elementary school. Zehra Osman, a member of our program's Advisory Committee, discussed NPS historic preservation process and concepts. Doug Madsen discussed NEPA permitting and his role in environmental compliance. While Eric Ackley showed us his project work including before and after photos/drawings of the Gardiner Gateway and Canyon Rim Overlook/Trail upgrades along with additional current and future planned work. We were also most fortunate

to hear from and talk with Superintendent Dan Wenk three days prior to his retirement. His candor and extensive experience spanning 30 years in landscape architecture became the capstone to our discussion on the gravity of climate change and its impact on the populations in the Park. The professionalism of the NPS staff was not lost on the students or faculty with a lively Q&A providing much insight into management challenges.

We finished our time with the Park staff at noon, and after distributing lunches, headed to the Canyon North Rim to experience the park projects first-hand. We hiked, took photos and observed from the Brink of the Lower Falls to Inspiration Point. Admittedly, we could have used another hour to allow for additional exploration - never enough time!

Loaded back on the bus and after head counting, we continued our counter-clockwise loop to Norris Geyer Basin. Here students and faculty explored classic national park Rustic style architecture and the boardwalk system through the hot springs. A relaxing movement through a remarkable landscape.

We headed out of the Park at 5ish and promptly hit traffic due to new road construction - a telltale sign of widening roads to accommodate bikes as well as ever increasing vehicular traffic. We witnessed a beautiful sunset drive through the Paradise Valley, a landscape that always stretches longer than I recall. We returned to Bozeman at 7:30 pm. - tired one and all but content. We could not have asked for better weather in the Park - perfect temperature, sunny with no wind, not to mention very few tourists (in comparison to mid-summer)! In reviewing student feedback, the trip proved a valuable experience and lesson. Hopefully our over-arching goal was achieved: To instill a love of place, a love of this landscape, and in-turn create future advocates. We need all the voices we can

muster "For the Benefit and Enjoyment of the People."

Parting thought: A special shout out to my colleagues! Rebekah VanWieren was the maestro that orchestrated all our satisfying lunches from Forks and Fingers Cafe and plenty of snack/drinks to fortify us through the day. James Pritchard, a remarkably natural tour guide, provided funny anecdotes, thoughts on predator's species, and Rustic architecture. And just when you needed that additional help or directions while hiking (me lost? never) Chris Kiel, Landscape Design Instructor, jumped in to lend a hand and a much needed map! Also, thank you to the department for the program support!

Grants

David Sands, "Developing Oat Cultivars with Increased Protein Content", Bay State Milling.

Kevin Wanner, "Protecting Alfalfa Yield from Weevil Damage in the Intermountain West Region", U.S. Department of Agriculture.

Mary Burrows, "Root rot mitigation in specialty crops" Montana Department of Agriculture.

Michelle Flenniken, "Efficacy of Antiviral Agents in Honey Bees", Montana Department of Agriculture.

Jason Cook, "Pioneer Symposia - Genetic Evaluation of Yield using Functional Genomics", Du Pont.

Publications

Ferreira, V.S. and Ivie, M.A. 2018. A Revision of *Lycinella* Gorham, 1884 with the Description of six New Species (Coleoptera, Lycidae, Calopterini). Zookeys 792: 69-89. <https://doi.org/10.3897/zookeys.792.28034>

Ferreira, V.S. and Ivie, M.A. 2018. A Review of the Nearctic Genus *Lucaina* Dugès, 1879 (Coleoptera: Lycidae: Lycinae: Calochromini), with Descriptions of Two New Species. The Coleopterists Bulletin, 72 (3):393-406. <http://www.bioone.org/doi/full/10.1649/0010-065X-72.3.393>

Ferreira, V.S., Barclay, M.V.L., and Ivie, M.A. 2018. Redescription of *Aporrhapis* Pascoe, 1887 (Coleoptera: Lycidae) With a Discussion of its Tribal Placement. The Coleopterists Bulletin, 72(2): 371-375. <https://doi.org/10.1649/0010-065X-72.2.371>

New Facebook Page

The Potato Lab would like to invite you to check out their Facebook page - Montana Seed Potato Certification.

Mulching Your Plants for Winter By Toby Day, Extension Horticulture Specialist

Reduced weeds, moisture retention, addition of nutrients, and pleasing aesthetics are some of the reasons we mulch around plants during the growing season. But have you thought about mulching your plants for the winter?

The one clear benefit to winter mulching is to keep the ground from being warmed by the sun, thus keeping the soil around the roots frozen. If the soil thaws and freezes, it can cause heaving which can disturb or even cause breakage of roots. The warming of the soil may also bring plants out of dormancy too early, thus causing winterkill. I have seen these issues – especially in strawberries.

Common materials used to mulch in winter are straw, shredded leaves, shredded bark, or even pine needles, anything that has an



Mulching Strawberries before winter.

insulative effect, but that is easy to remove in the spring. Most mulches are spread 3"-4" thick.

The most common mistake I see in winter mulching is that people put mulch down way too early (yes, September, and even October is too early in many cases). If mulch is spread around plants before the soil has had a chance to harden or even freeze, the insulative effect of the mulch may cause worse heaving and in rare events, may bring some plants out of dormancy as our coldest temperatures hit this winter. Once our low temperatures consistently hit 25°F or less, it is time to mulch. Therefore, November is a great time to mulch!

Commonly mulched plants include:

Plants that have shallow or surface roots, such as strawberries. Their roots are effectively only 4" – 6" deep. I would also mulch around newly planted perennials that may not have established a full root system going in winter – and especially ones that were planted this fall.

Evergreen trees and shrubs. This is mostly to retain soil moisture so that water is available when they come out of dormancy in late winter/early spring. It will help keep them from desiccating.

Tea Roses. It is important to mulch tea roses above the graft union. This may require more than average mulching. I know of a gardener in Bozeman that uses wire cages filled with straw around their tea roses.

Winter and cold sensitive plants. Let's face it, many of us are plant nerds and are often trying plants that just out of our USDA hardiness zones. Heavy mulching of zone 5 and higher plants may give them a chance to survive our cold winter temperatures.

Finally, snow is a great mulch. It has a great insulative effect and often abundant. Last

year was ideal as it snowed early, often, and it stuck around. I remember, because I shoveled a total of 129" of snow between November and March from my driveway. Snow is a great mulch, but I wouldn't always count on it. Some winters have had abysmal snow and wicked Chinooks that have had quite adverse effects on some plants – such as my strawberries.

ASLA Pumpkin Carving

Thank you to The American Society of Landscape Architects Student Club (ASLA) for carving pumpkins for display outside of the Plant Growth Center.



From left clockwise seated are Riley Hunt and Olivia Arnes, standing are Julia Arnes, Samantha Gilk, and a visitor.



Recipe of the Month

Turkey Sliders

2 medium stalks, celery cut up
1 medium carrot, cut up
1 medium onion, cut up
1 tsp. fresh thyme leaves
5 large leaves sage, torn



- 1 tbsp. extra-virgin olive oil
- 2 1/2 c. all-purpose flour
- 1 tbsp. sugar
- 1 tbsp. baking powder
- 1/2 tsp. baking soda
- 4 tbsp. butter, cut up and cold
- 1 1/4 c. buttermilk
- 1 1/2 lb. ground turkey (93% lean)
- 1/2 c. mayonnaise
- 1/4 c. cranberry preserves or sauce

In food processor, pulse celery, carrot, onion, thyme, and sage until finely chopped. In 12" skillet, heat oil on medium. Add vegetable mixture and 1/4 teaspoon each salt and pepper; cook 15 minutes or until tender, stirring occasionally. Transfer to medium bowl; cook completely.

Preheat oven to 450 degrees F. Spray two 12-cup muffin pans with nonstick cooking spray. Line large rimmed baking sheet with parchment. In clean food processor bowl, pulse flour, sugar, baking powder, baking soda, and 3/4 teaspoon salt until blended. Add butter. Pulse until coarse crumbs form. Transfer mixture to large bowl. Stir in buttermilk, then one-third of cooked vegetable mixture until just blended. Divide among cups of prepared muffin pans (about 3 tablespoons each).

Bake 15 minutes or until golden brown. Transfer biscuits from pans to wire racks; let cool slightly. Meanwhile, in medium bowl, combine turkey, remaining cooked vegetable mixture, and 1/4 teaspoon salt until just combined. Form into 24 patties (2" wide); place on prepared baking sheet. Bake 15 minutes or until cooked through (165 degrees F). 3 When biscuits are cool enough to handle, slice in half. Add turkey patties and dollops of mayo and cranberry preserves.

November Birthdays

- Jim Berg 4
- Jack Martin 8
- Steve Hystad 6
- Derek Lewis 9
- Joseph Jensen 10



- Norm Weeden 12
- Harvey TeSlaa 15
- Liz Elmore 16
- Aishwarya Kothari 18
- Ryan Thum 30

Primary Colors at the PGC!

Farewell to the red trim in the hallways running east-west at the PGC. Starting with the hallway closest to Plant BioScience, the trim will be green, the next hallway will be navy blue, and the next will be yellow (or sunflower according to David Baumbauer).

As you can imagine, this involves many hours of detailed painting so a big thank you to Nate Howe and Clayton Crystal, painters from Facility Services, for all their hard work!



Nate Howe and Clayton Crystal giving the PGC hallways a new look.

Go to next page for 2018 "Run For Your Life" Halloween race.

Run for Your Life

By Uta Stuhr, PhD Graduate Student

On Saturday, October 27, a group of PSPP graduate students and friends braved the wet and cold October morning and gathered for the 2018 *Run For Your Life* Halloween race. This yearly running event is organized to "benefit the Help Center's work for suicide prevention and intervention" in our Bozeman community. Under the team name "Mermania" and uniformly dressed in sparkling fish scale tights, our group of 12 merpeople joined the race – including our youngest member, 5-month old Nora Burkhardt. Together with werewolves, witches, comic heroes, princesses, pirates, ghosts, and many more, we ran the 5k and 10k, quite appreciative of the rain putting us in our preferred element. Everyone enjoyed the run through Bozeman's southeast neighborhoods.



Our group of merpeople at the 2018 Run For Your Life Halloween race: Front row: Jake Tracy, Back Row left to right: Sandra Gilson, Brian Ross, Uta McKelvy, Emma Jobson, Carmen Murphy, Nora Burkhardt, Andy Burkhardt, Carrie Harris, Libby Mohr, Kate Marshall, and Traci Hoo-gland.