

Botany & Conservation

A newsletter for alumni and friends of Botany and Conservation Biology

Fall/Winter 2020



Diversity, Equity and Inclusion efforts - page 6

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College of Letters & Science
UNIVERSITY OF WISCONSIN-MADISON

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Ken Cameron

Chair's Letter

The beginning of the Fall semester is usually a time of joy and people coming together – faculty, staff, and graduate students return from their field sites, family vacations, and scientific conferences; new undergraduates join us in Madison for the first time, and the academic community looks forward to another year of collaboration, teaching, learning, and building relationships. But, the summer of 2020 was unlike any other as Wisconsin struggled to contain the spread of coronavirus and protests over social injustice gripped Madison, Milwaukee, Kenosha, and other cities across the badger state. As this new year began the Department of Botany took the opportunity to reflect on our own historical and current lack of diversity among Black, Indigenous, and other People of Color. We are committed to becoming a more equitable, just, and inclusive community and have initiated a series of first steps toward reaching that goal, as you will read in the pages of this Newsletter. Among these are the adoption of a formal diversity statement,

“It is abundantly clear that an individual’s chances of success may be influenced unfairly by characteristics including, but not limited to, ethnicity, country or region of origin, sex, sexual orientation, gender identity, religion, age, family status, physical ability, neurological typicality, political affiliation, military service, or socioeconomic status. Bias and discrimination, whether explicit or implicit, can perpetrate injustices on individuals and deprive institutions of the full diversity of opinions, backgrounds, and experiences needed to function at the highest level.”

The Department of Botany at UW-Madison recognizes these challenges and is committed to becoming more diversified and inclusive, and to advancing the interests of all students, staff, and faculty. Our goal is to be a department where all members are recognized, respected, safe, and empowered, irrespective of cultural background or identity.”

The inability to gather together continues to present a challenge to all of us, but there are silver linings to our new online existence – an expanded and more diverse Biology Colloquium series is one example. This year we have been exposed to world class research from twelve scientists from ten different nations representing Africa, Asia, Australia, Central America, and Europe, as well as the United States. Although we are apart, we continue to stay connected across cultures and time zones and hope that our alumni will stay in touch as well. Please drop us a line to let us know what you are up to! and if you would like to know more about the UW Biology Colloquium or perhaps even to make a directed financial gift to support the series, please visit our webpage. Thank you.

Stay well,

Prof. Ken Cameron
Chair, Dept of Botany &
Conservation Biology

This newsletter is published by the Department of Botany at the University of Wisconsin-Madison.

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COVID-19 stimulates a reimaging of the Biology Colloquium

by Prof. Thomas Givnish

By March, COVID-19 was upending life around the world. Here in Madison, the University banned official travel, sent undergrads home after spring break, transferred all courses online, and greatly restricted access to campus buildings (including Birge Hall).

By April, it became obvious many of these strictures would remain in force in the fall, and that Botany would be unable to offer (with Integrative Biology) our long-standing and highly popular Biology Colloquium – at least as it had been run in the past. By flying in speakers with diverse backgrounds, having them give talks on exciting new approaches and findings, and meet with Botany faculty, staff, and students, the Colloquium enriched the intellectual life of our departments and the whole campus, stimulated new thinking and new collaborations in Biology, and raised Botany's profile nationally and internationally.

When we were faced with possibly losing the Biology Colloquium and its advantages for a year, I made a pitch to

the colloquium committees in Botany and Integrative Biology that we take an unfortunate situation – our inability to fly speakers in to give face-to-face talks and participate in face-to-face discussions – and turn it to our advantage by going virtual. Based on the ensuing discussions, we decided to invite leading researchers from around the world – whom we could never afford to bring physically to Madison – to give their lectures online and to meet virtually with our staffs and students. A new challenge was making sure we could connect with the audience virtually without technical glitches.

The result has been a great success – and has led us to think about including one or two virtual colloquia in years to come, when (we hope!) life returns mostly to normal. This fall, Botany has enjoyed the virtual visits of Aarón Rodríguez (U Guadalajara and alumnus of the Sytsma lab), talking about the diversity of the Mexican flora; Kirsten Bombliès (U Zürich, and winner of a MacArthur award), speaking about

the adaptive evolution of meiosis; Rod Peakall (Australian National University), exploring the evolution of extreme pollinator specializations in Australian orchids; Marc-André Sélosse (Museum of Natural History, Paris), recounting how orchids manipulate and often eat their fungal partners; Gerhard Zotz (U Oldenburg), detailing the remarkable physiological ecology of epiphytes; and Adam West (U Cape Town), discussing key lessons about fire ecology in South African plants. Hosts included Ken Cameron, Hiroshi Meda, Evan Eifler, Tom Givnish, and Kate McCulloh. An equally exciting group of speakers is set for the spring.

If you are interested in listening in to any of our colloquia, please join us Thursdays at 3:30 pm Central Time on Webex at go.wisc.edu/zg115k. The colloquium schedule can be found at botany.wisc.edu/biology-colloquium.

Botany staff receive university honors

The Botany Department is proud of its staff and gratified to have three of its members recognized university- and college-wide for their efforts and contributions:

LETTERS & SCIENCE EARLY CAREER AWARD



Mary Ann Feist
Senior Academic Curator,
Wisconsin State Herbarium

CHANCELLOR'S AWARD FOR EXCELLENCE IN RESEARCH: CRITICAL RESEARCH SUPPORT



Sarah Swanson
Director, Newcomb Imaging Center
Associate Scientist

LETTERS & SCIENCE MID-CAREER AWARD



Marie Trest
Assoc. Faculty Associate

Murder Mystery: When the Witness is a Tree

Adapted from an article by Rebecca Wallace, USDA FPL

In late June of 2010 Bonnie Woodward went missing. An acquaintance, Roger Carroll, was an early suspect for her assumed murder but police found no evidence of any crime, and never found her body. For nearly eight years she remained missing and the case went cold. It was only after Roger Carroll admitted to his wife that he had killed Woodward that critical new information came to light.

A witness claimed Carroll shot Woodward at his rural Jersey County, Illinois, home, burned her remains in a huge brush pile that he stoked for several days, then used a tractor to push all the evidence – or so he thought – into a creek. Carroll was taken into custody in April of 2018 and charged with first-degree murder.

Police combed the alleged scene of the crime and scoured the area where the brush pile was supposedly burned, but after eight years there was little or no physical evidence to be found, and nothing that definitively linked Woodward to Carroll and his property. However, one investigator with a keen eye noticed that the tree immediately adjacent to the alleged burn site had an unusual wound on its trunk and wondered if it could be a result of being in close proximity to the fire. Was it possible this tree could be an independent witness of the disposal of Bonnie Woodward's body?

If a tree is going to be a witness, a translator is needed to get its testimony. Enter Alex Wiedenhoef, Botany alumnus and Adjunct Associate Professor of Botany as well as Forest Products Laboratory (FPL) Research Botanist and Team Leader in the Center for Wood Anatomy Research (CWAR). Wiedenhoef can read trees like most of us read books. Often when wood is

evidence in a crime or accident, law enforcement officials send the samples his way.

“Investigator Frank Scoggins noticed the wound on the tree and decided to find someone who could help him see what, if any, story the tree could tell. He talked to botanists at the nearby

Missouri Botanical Garden, and following those leads found his way to the Center for

Wood Anatomy Research,” Wiedenhoef said. Scoggins and Wiedenhoef initially explored using increment cores from the tree to attempt to date the wound without killing the tree, but that wasn't adequate to resolve the question.

“When I explained to Frank that what I really wanted was several entire discs – we call them cookies – of the trunk of the

tree at multiple heights along the wound, I thought I was asking for too much,” said Wiedenhoef. “Within a few weeks I received three beautiful cookies sampled exactly as I had requested.”

With the cookies on site in the evidence lockup in the CWAR, Wiedenhoef was able to study the tree segments up close... extremely close. Because he knew the tree was cut down in late June of 2018 and it was alive when felled, he was able to count the annual growth rings of the tree, working inward from the bark in an uninjured part of the tree. The 2018 growth season was underway

when the tree was cut down, so the outermost partial growth ring represented 2018. He counted inward to 2010 – the time of the alleged burning of Bonnie Woodward's body, and then moved within the 2010 growth ring toward the wound. He found, quite clearly, that the wound happened within the 2010 growing season.

*If a tree is going to be a witness,
a translator is needed to get its testimony.*



Tree cookie including the unusual wound collected as evidence and sent to FPL's Center for Wood Anatomy Research

“To evaluate the wound itself—the wood formed before wounding, and then wound tissue formed as a part of the tree’s healing process— I asked my colleague and forensic wood anatomist Richard Soares to prepare research-quality microscope sections of this critical area,” said Wiedenhoef. “Based on my observations of the cookie and the detailed microscopic analysis of Mr. Soares’ slides, I was able to confirm without doubt that the wound took place in the 2010 growing season.”

Wiedenhoef provided his results to the investigators in July 2018, and then went back to his normal research work. It wasn’t until summer of 2019 that prosecution contacted Wiedenhoef to discuss the possibility of him being an expert witness in the case. There was still little other physical evidence, and the tree’s “testimony” was seen as essential to corroborate the witness’ story. The trial was held in March of 2020, and Wiedenhoef was there to tell the tree’s story.

In order to translate the tree’s message for the jury, he demonstrated the wood science and tree biology behind the

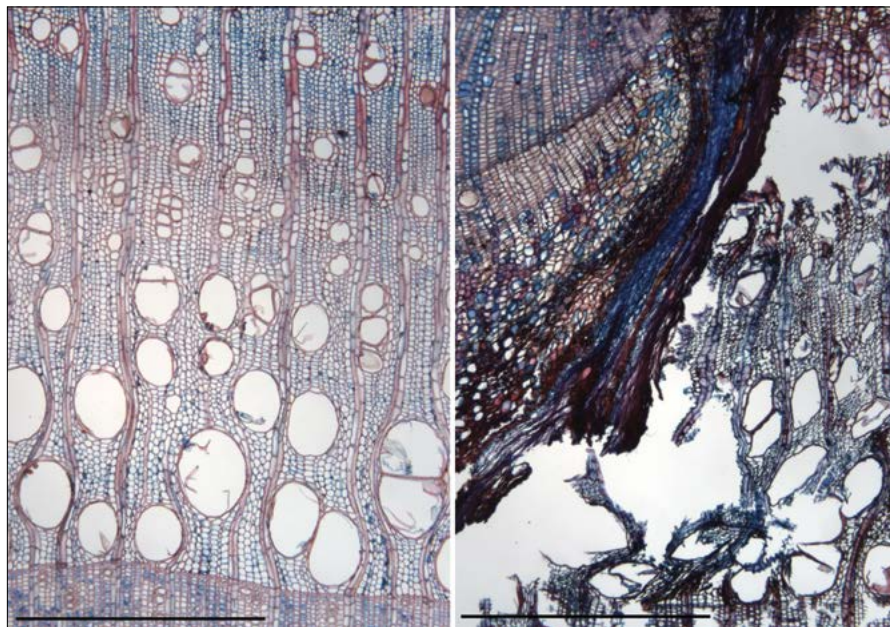
analysis. Wiedenhoef used a machine vision tool he and a colleague at FPL developed called the XyloTron to display a magnified view of the growth rings in real time. Just as he did back in his lab, he showed the jury the polished, magnified surface of the bark, and then moving inward, came to the

partial growth ring from 2018. 2017... 2016... to 2010, and then within 2010 to the wound.

“I was pretty nervous,” said Wiedenhoef. “I had never been on the stand before, and it was important to me to be clear to the jury what we can learn from the tree, but also to be completely direct about what we cannot know from the same evidence.” It wasn’t possible, for instance, for Wiedenhoef to say definitively that the wound was from a fire, nor could he confirm that the

event happened on exactly the dates that the fire was alleged to have occurred.

But what the tree and other evidence had to offer was enough for the jury. After a week-long trial, Roger Carroll was found guilty of first-degree murder, and justice finally prevailed for Bonnie Woodward.



Transmitted light micrographs. Left: 2010 growth ring in undamaged portion of the tree. Right: Degraded 2010 growth ring (lower right) and healthy wound-response tissue (upper left) growing to close over the wound. Each scale bar is 1 millimeter. (Image credit: Richard Soares.)

Consider helping our Department’s people and programs

Botany Department General Fund (fund # 112161060)

The generosity of our donors allows the Botany Department to help our students, faculty and staff reach their full potential via grants, awards, travel support, internships, guest lectures, and buying critical equipment. Please consider making a donation through the UW Foundation. See: <http://www.supportuw.org/giving?seq=1254>

Additional targeted funds are available at:

<https://botany.wisc.edu/giving/botany-directed-funds/>

Conservation Biology Major Fund (fund # 112168143)

Please join us in our efforts to provide support for important Conservation Biology program priorities. Gifts to the Conservation Biology Major are used to recognize outstanding Conservation Biology undergraduates, support various activities such as research and study abroad, and to sponsor special lectures and other professional development opportunities for students. See: <http://www.supportuw.org/giving?seq=19206>

Online donations at the links provided are easy and secure. If you prefer to send a check please make it out to the University of Wisconsin Foundation and include the fund name or number on your check.

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BLACK LIVES MATTE

by Prof. Anne Pringle

The killing of George Floyd on May 25, 2020 was a reckoning for our country and also for Botany. In an important sense, the Black Lives Matter movement accelerated an ongoing dynamic within our department. Let me explain: last year, our department began to grapple with a long, complex history of sexual harassment. At a series of meetings with faculty, and then staff, and finally with graduate students, leadership began a conversation about what are now named as Title IX issues. In retrospect, these brutally honest and difficult conversations were the start of a new commitment to equity. In this context, Botany established what is now the Diversity, Equity and Inclusion (DEI) Committee. The DEI is made up of faculty, staff, and three graduate students elected by the graduate student body.

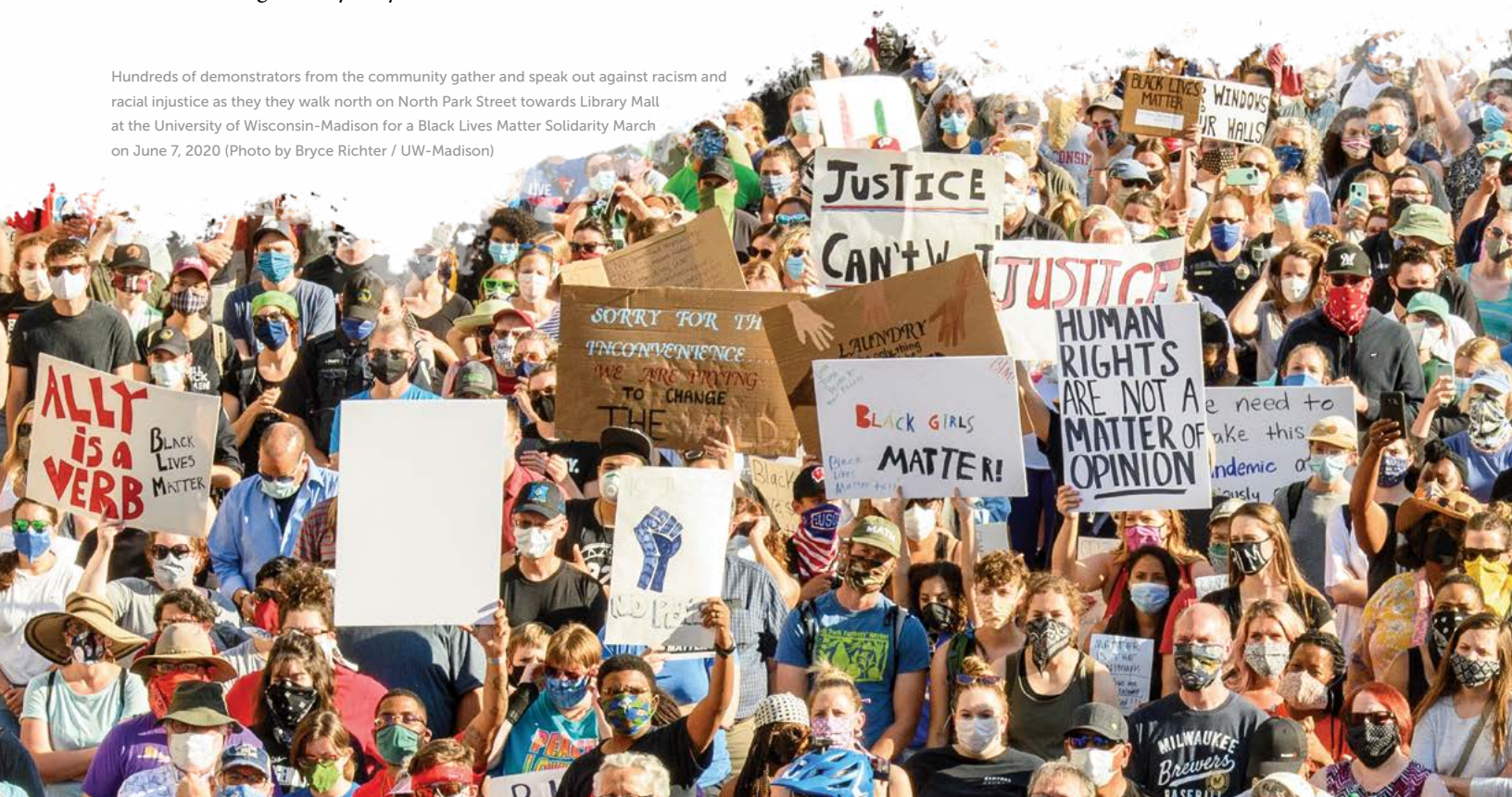
The newly established DEI quickly got to work drafting an ambitious agenda of change. We wrote and circulated a “how-to” manual for travel to field work and conferences. Advice ranges from the totally obvious (“fieldwork and conferences are not the time for public nudity”) to the more nuanced (see thepregnantscholar.org). We gladly revamped a display in the Birge Hall lobby to showcase photographs and stories from current scholars and relegated the photographs of our history to... well, history. We drafted a statement on diversity, writing “The Department of Botany at UW-Madison... is committed to becoming a more inclusive department and to advancing the interests of all students, staff, and faculty. Our goal is to be a diverse department where all members are recognized, respected, safe, and empowered, irrespective of cultural background or identity.” This statement was first read at a departmental meeting in early May.

When George Floyd was killed just a few weeks later, the department issued a statement, as did many other biology departments and professional societies. It read in part:

“As students, staff and faculty, and as teachers and scientists, we remain committed to education and see education as one critical path towards a more just future. Our department wants to attract curious minds from everywhere and create a community in which knowledge is pursued without hindrances or barriers of any sort. But to create that community, we must recognize the forces of racism and discrimination in our larger world and acknowledge the historical role academic institutions have played in supporting inequity. Please continue to work with us as we acknowledge and learn from our past struggles with sexism, racism, and inequality of all kinds. Work with us as we move forward to do whatever we can to achieve an inclusive education that meets the needs of all kinds of students.”

But what happened next became the start of a different effort, one that now involves our entire department. Our graduate students, who are emerging as leaders not only in our department but across campus as well, sent the department

Hundreds of demonstrators from the community gather and speak out against racism and racial injustice as they they walk north on North Park Street towards Library Mall at the University of Wisconsin-Madison for a Black Lives Matter Solidarity March on June 7, 2020 (Photo by Bryce Richter / UW-Madison)



R IN BOTANY, TOO

a letter. It outlines seven action items, ranging from “raise funds to enable Black students to join the *Black Graduate and Professional Student Association* (BGPSA)” to “establish a relationship with the UW-Madison chapter of *Minorities in Agriculture, Natural Resources and Related Sciences* (MANRRS)” and “celebrate and teach Black History”. The statement concludes:

*“For the future of the Department:
We cannot ignore the racial injustice in our country. As a department, it is imperative that we pursue an actively anti-racist agenda that recognizes the role Academia has played in perpetuating a culture of anti-Black violence and discrimination. Our departmental culture has not been improved by incremental changes; this is evident in our recent failures in attracting BIPOC students, staff, and faculty. We can no longer be reactive; we must be proactive.”*

As was true of our conversation focused on sexual harassment, some of the conversation around BLM is difficult to hear and some of it is controversial. For example, not everyone agrees that divesting from the UW police is sound policy.

But while there isn’t consensus on all of the action items suggested by the letter, there is a commitment to talking and moving forward. The letter was written by our students, but a number of staff and faculty signed the letter too. In that spirit, at a departmental meeting in October the entire department committed to joining one of 10 working groups, each charged with thinking through different problems: Group A is charged with thinking through pipeline and retention issues for BIPOC undergraduates, Group D is charged with “identifying resources and training to help us become educated about race and how to discuss race in constructive ways”, etc. Each person in Botany is a part of a working group and this fall each working group is meeting to come up with a set of actions that we can take to improve our climate and become more diverse. Thus far suggestions have ranged from “post more explicit instructions about how to apply to our graduate programs on our website, to make it easier for any undergraduate to apply” to “use available data to identify potential grade gaps between majority and minority students” to “establish more formal community partnerships”. We are in the thick of our working group efforts now and I look forward to reporting back to you about our accomplishments.

In the last year we have really changed as a department. Although we’ve got a lot of work left to do, and continue to make mistakes, I am proud to say we are better than we were. We are in the midst of an ongoing process to educate ourselves, engage, become more diverse, and emerge as leaders in the ongoing fight for equity.

Forward!



STUDENT PROFILES

Field Notes: Julia Buskirk

Julia is in her third year in the Conservation Biology Program.

This past Spring, I received a Hilldale Fellowship with Dr. Joshua Calhoun to develop a public-facing written history of



Lake Mendota, which is often called “the most researched lake in the world”. Water Lines was born, a series of blogs and illustrations hosted on Holding History that highlight the ecological and social histories revolving around local Lake Mendota. Combining research, history, and interviews from current day water researchers helped me understand the context for what the lake is like today.

After learning about the lake’s history on a geologic timescale, I’m especially blown away now by how fast the lake is changing with the introduction of invasive species in our current lifetimes. In the timeframe of just one undergraduate’s career, Zebra Mussels have completely altered Lake Mendota! Through the span of this project, I’ve also learned that drawing is a really fun and effective way to communicate science. In the coming semester, I’ll be building off this blog series to develop a graphic novel that delves into the changes in and around Lake

Mendota. You can follow the project on Instagram and Twitter @waterylines.



Zebra mussel illustration by Julia Buskirk

Field Notes: Laura Bessenecker

Laura will graduate in 2020 as a Botany major.

My love for Botany started with my love for food. Growing up, there were always people from different countries living in our home, and in turn, I had the opportunity to travel to several different countries as a kid. In each of these circumstances, the moments that brought us together were over the meals we shared. Entering college with a love for community welfare, I was surprised at how drawn I was to plant science. After taking additional classes in food systems and spending a summer working at Troy Farm, I began to see how all these pieces fit together. On the Northside of Madison, Troy is made up of a farm, community gardens, and a low-income housing community. Though the farm’s primary income is from its CSA, Troy noticed that their CSA customers were mainly from wealthy white suburbs. Troy aspired to live up to the CSA title and

be just that; agriculture supported by their own community. So they reduced prices, offered alternative options for produce, and started a weekly Pizza Night featuring the week’s vegetables so that their community could share in the harvest. We often see profit as the

endgame, especially when it comes to food. But Troy proved that community is the ultimate goal. Here, I found that food and community go hand in hand, and as I look for job opportunities after graduation this December, I hope to marry these two loves.



Thank you to all the alumni who took the time to send us their updates. Please keep the news coming!

Barbara Lashmet (née Matzen) (Botany MS 1966) retired from teaching many, many years ago. She taught at high schools and community colleges for about 30 years – science and math but mainly Zoology and Botany – in the Joliet, IL area. She no longer teaches but is very involved with AAUW (American Association of University Women) in the Sun City West, AZ, area. She has held all positions including president in the organization, and is now very involved in “College Connections”, where members organize get-togethers with students at various schools and help students when they can. This year her group will be working with Glendale Community College. Students majoring in Zoology and Botany usually come to her as she is the only one with that major in the group. AAUW also raises money for scholarships for female high school graduates going on to college.

Ronald Liesner (Botany BS 1967) has worked at the Missouri Botanical Garden for forty-eight years. Before that he worked five years at the Field Museum in Chicago and in the Wisconsin State Herbarium as a student.

Ronald writes, “I have sixty-seven species and one genus named after me. The sixty-seven species is probably a record among living people. I sorted one million herbarium specimens to family in ten years, plus I did a lot of other things. Probably, no one else did that many in their life time. If you show me 1000 fertile collections from the neotropics, if I glance at them for two seconds each, I will be able to say what family 999 are.”

Vicki Watson (Botany PhD 1981) keeps busy continuing research and action for watershed CPR (conservation, preservation & restoration) since retiring from the University of Montana in 2017 after

35 years in the Environmental Studies program. She also continues to work with current and former students on various community sustainability initiatives. “In these tough times, volunteering with other concerned citizens keeps you sane.” says Vicki.



Kathi Borgmann

Kathi Borgmann (BAC 1998) works as a Communications Coordinator for the Cornell Lab of Ornithology in Ithaca, New York. She received an honorable mention in the excellence in institutional writing award from the National Association of Science Writers for her article in the Cornell Lab of Ornithology’s Living Bird Magazine “The forgotten female: how a generation of women scientists changed our view of evolution”

Carrie Brown (BAC 1998) is the founding director of the social journalism Master’s program at the Newmark Graduate School of Journalism at CUNY. Launched in 2015, this program prepares students for careers in engaged journalism, with a special emphasis on learning how to listen, understand community information needs, build relationships, and produce tangible impact.

Her research and recent book, *Transforming Newsrooms*, centers on how news organizations can adapt to the changing media landscape. Brown was previously an associate professor of



Carrie Brown

journalism at the University of Memphis, where she also served as the director of the city-wide high school journalism program and founded a graduate certificate program in entrepreneurial journalism. She has also worked as a daily newspaper reporter and editor as well as serving as the traveling curriculum manager for the Committee of Concerned Journalists before receiving her PhD in journalism at the University of Missouri in 2008. She has a Master’s degree in communication from the Annenberg School at Penn and an undergraduate degree in journalism and conservation biology from the University of Wisconsin.



Sandra Eklof

Sandra Eklof (BAC 2004) decided to return to her love of companion animals, and is now a veterinary technician and VTS in anesthesia/analgesia at UW Veterinary Care. Her love of conservation biology is still strong, and she loves

regular backpacking trips, hiking and backyard conservation practices (rain gardens, toad houses, “wild” part of the yard for wildlife food and shelter, bat house).



Eric Moody

Eric Moody (BAC 2009) started a position last fall as an Assistant Professor in the Department of Biology at Middlebury College in Middlebury, VT. He wishes he could share recent travel experiences, but this photo is from his most recent trip to study desert fishes last April.

Robert Wernerehl (Botany PhD 2014) state botanist with the Massachusetts Division of Fisheries and Wildlife’s Natural Heritage and Endangered Species Program discovered a population of rare crested fringed orchids during his fieldwork. This orchid had not been seen in the state for two decades and the find received a lot of media coverage including the Boston Globe, CBS Boston and WBUR, a major Boston public radio station.

Anchittha Satjarak (Botany PhD 2017) is currently on the faculty of the Department of Botany at Chulalongkorn University, Bangkok Thailand. There, she has served on a national committee charged with evaluating improvements in science and maths teaching in Thai high schools. In that process, she visited

many schools across the country. The photo shows Dr. Satjarak, wearing her university’s official uniform as required for palace events, participating in an awards ceremony (the Jubilee Award initiated by Her Royal Highness Princess Maha Chakri Sirindhorn). The ceremony recognized 70 winning high schools. Dr. Satjarak appreciated the opportunity to recognize schools that had improved learning for all students, not just the gifted, and that had adapted their science and maths teaching to their local school environments and communities. Her committee hopes that the award-winning schools will help other schools to accomplish these worthy goals. In addition to national and university service, Dr. Satjarak continues teaching, including a course on algal biology, and research in the areas of plant and algal genomics and metagenomics. Her most recently-accepted first-author article, “Shotgun metagenomics and microscopy indicate diverse cyanophytes, other bacteria, and microeukaryotes in the epimicrobiota of a northern Chilean wetland Nostoc (Cyanobacteria),” will soon appear in the *Journal of Phycology*.



Anchittha Satjarak

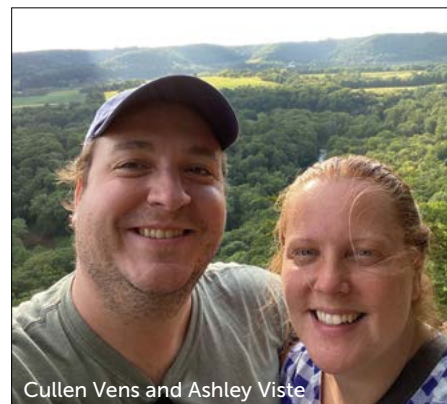
Cullen Vens (Botany PhD 2019) just had his first anniversary in the UW-Madison Department of Biochemistry after a

successful (however short) 6-month stint at UW Carbone Cancer Center.

In Biochem, he helps faculty (and some wonderful staff) pull in grants from all kinds of sponsors. In the year since joining the department, he has facilitated the submission of several successful proposals. One recent success was in establishing the Midwest Center for Cryo-Electron Tomography under PI Elizabeth Wright. With this award, UW-Madison becomes a hub for a national network of Cryo-EM and -ET facilities, all funded by an NIH U24 mechanism. The award includes a collaborator from the Department of Botany, Professor Marisa Otegui.

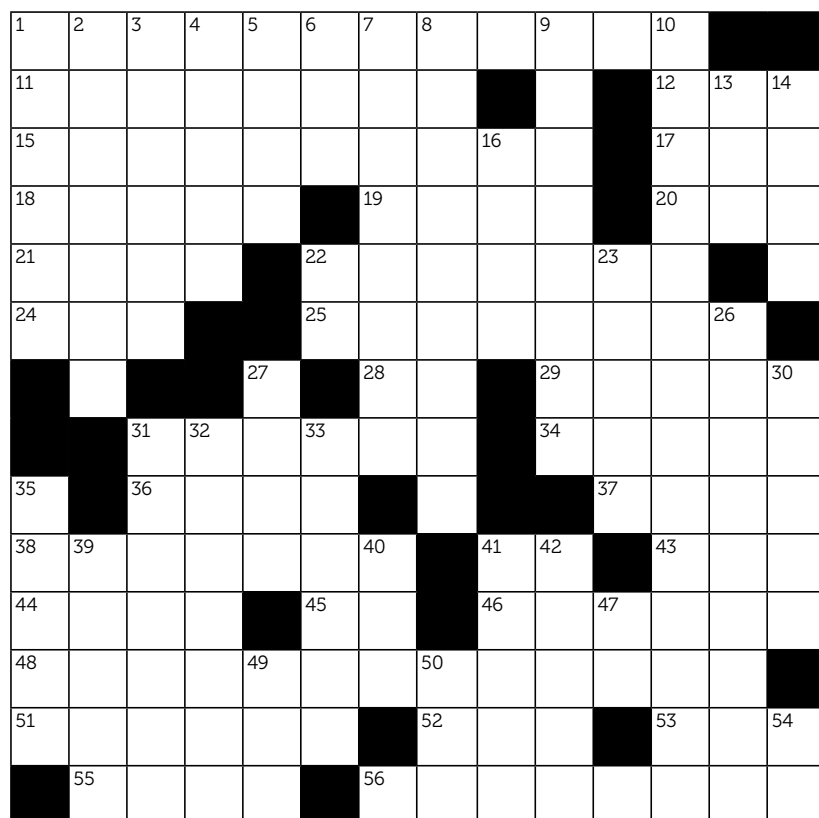
Cullen writes, “Outside of work, I spend my time with my daughters (Kennedy and Allison), my partner (Ashley Viste), and our new cat, Casper. Our frequent walks in the neighborhood give us the opportunity for run-ins with Professor Donna Fernandez. When we feel more adventurous, we head out for hikes in Pheasant Branch Conservancy, Picnic Point Woods, or the UW Arboretum.”

The pandemic has had the unexpected side-effect of propelling him to – rather frequently – video chat with friends, family, and colleagues, near and far. A few of our Botany alumni (most notably Dr. Richard I. Hilleary and honorary-alum, the French national, Dr. Arthur Poitout) are frequent attendees. These chats have helped keep loved ones close in a time of intolerable distance.



Cullen Vens and Ashley Viste

2020 botany crossword contributed by David Baum, edited by Tom Givnish (answers at botany.wisc.edu/alumni-newsletter/)



Across

1. Preparations of samples for 45-A, by Otegui and others
11. *Azadirachta indica*
12. Edible polypore
15. Where wool is put when dyeing with *Isatis tinctoria*
17. Herbarium in northern Israel (abbr.)
18. Bole tossed in the highlands
19. Mucilaginous Asphodelaceae genus
20. Conservation organization based in Florida (abbr.)
21. Small university in the Cuban highlands,

- that sounds like it should be in New Zealand (abbr.)
22. Ashy order
24. Homophone of "spread seed" that is usually done indoors
25. The photosynthetic organ of a sword lily (Iridaceae), familiarly
28. Chapter of ICBN dealing with effective and valid publication
29. Endocarp, relative to the mesocarp, and pericarp
31. The tribe that contains oleander
34. French *Malus* product

36. Possible abbreviation for the Asian thistles *O. nivea* or *O. nidulans*
37. Possible abbreviation for the rock cress *A. pedemontana*
38. Appropriate port-manteau for 🌱, 🌿, or 🌸
41. Important plant hormone (abbr.)
43. Product flavored with *Humulus lupulus*
44. Institute for biodiversity and sustainability at the California Academy of Science (abbr.)
45. Imaging technology (abbr.)
46. RNA-specific base

48. Focuser used in 45-A
51. Winged fruit
52. *Persea americana* informally
53. Makes French vampire sick?
55. Sugarcane top shoot borers (abbr.)
56. *Agave attenuata* common name, inspired by its curved inflorescence

Down

1. Blessed thistle genus
2. Taxonomist, sometimes
3. *Taxus*-derived weapon
4. Vowel-rich, Asian orchid genus in Vandaeae
5. Lead-in to fruit or anise
6. Arabidopsis mutant showing early responses to dehydration
7. Stinging serpent genus (Loasaceae)
8. *Camellia*-derived fortune-tellers
9. A group of related acids obtained from orchil-dye-producing lichens
10. Five-flavor berry family
13. *Zea* female inflorescence
14. 10⁻¹²
16. Lead-in to stool or flax
22. Outgroup (abbr.)
23. *Anisopappus* synonym that sounds like a choosing word

26. Referring to highly leached tropical soils enriched in iron and aluminum
27. Greek prefix for pure white
30. What a waxy cuticle does to water
31. What TEMs are relative to another category of 45-A
32. *Ulmus* pathogen
33. Ethiopian staple made with *Eragrostis tef* flour
35. Firs
39. Inefficient abbreviation for a flattened-at-the-poles sphere
40. omaltooligosaccharide (abbr.)
41. *Psidium* fruit with several times more vitamin C than an orange
42. Inert gas sometimes used when preparing samples for 45-A
47. Climbing up to *Amborella* & Nymphaeales, without Illiciales and Trimeniaceae-*Austrobaileya*?
49. Transcriptional regulators (abbr.)
50. English botanist (1832-1912) who monographed *Crocus* and had a big mouth?
54. Leucine-Lysine



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Madison, WI

Backyard surprise

One silver lining of the pandemic is the fact that many of us spent more time outside over the summer enjoying the plants in person. A Botany staff member stumbled across this group of rare *Triphora trianthophoros* (three birds orchid) in her own Madison backyard that had gone unnoticed for years!

