



College of Agriculture, Life Sciences
and Natural Resources
Botany

BOTANY DEPT. NEWSLETTER

MAY 2025

ISSUE #1



Department Head Brent Ewers

LETTER FROM THE DEPT. HEAD

Dear Friends and Alumni of the Botany Department,

I am very pleased to share with you the inaugural issue of the Botany Department Newsletter! It has been many years since we've had a consistent newsletter, and we're excited to re-establish this connection with you, our valued community of alumni and supporters. Moving forward, we are committed to providing you with updates on a quarterly basis. This newsletter is made possible thanks to the hard work of Andie Stigers. Andie, along with Rachel Dobjeleski, joined the Botany staff following the reorganization of the Life Science Support Center, which occurred when Botany transitioned from the College of Arts and Sciences to the College of Agriculture, Life Sciences, and Natural Resources (CALSNR). This move, while requiring significant effort from CALSNR leadership, faculty, and staff, has been a great success. We are especially grateful for CALSNR's support in advising undergraduate students and promoting our degree programs. One of my favorite parts of being Department Head is getting to brag about our outstanding faculty and students. In this issue, we are proud to feature Dr. Lauren Shoemaker, who will soon be promoted to Associate Professor. Lauren's innovative teaching in data wrangling and visualization, alongside her research on plant community interactions and the role of facilitation, exemplifies the powerful synergy between teaching and research that defines our department. We also introduce our newest faculty member, Dr. Sara Germain, through her research group. I'm thrilled by the energy and enthusiasm Sara brings to the department as she establishes her lab and builds her team. This issue also highlights the achievements of graduate students in Dr. Daniel Laughlin's lab. Daniel has had another exceptional research year, with a paper in Science and a recently published book—we'll be sharing more about these accomplishments in our next issue. Finally, I have a personal request: we want to hear from you! Please send us your updates and success stories. Starting with our next newsletter, we hope to dedicate a large section to celebrating the incredible achievements of our alumni and friends.

Thank you for your continued support of the Botany Department. We are proud of where we are and excited for what's ahead.

Sincerely,
Brent Ewers

Faculty Highlight: Lauren Shoemaker



Lauren Shoemaker is one of our Assistant Professors. She started at UW in 2022 and has impressed us everyday since then! Lauren earned her Bachelors degree from Colorado College in 2011 and her PhD from the University of Colorado Boulder in 2017. Lauren has been teaching Introduction to Research & Analysis for undergrads, and Data Wrangling & Visualization in R for grad students. When Lauren first began teaching Introduction to Research & Analysis the average enrollment number was 6 students. Since Lauren began teaching the course she has increased that number to 40! When asked about the biggest discovery or insight from her lab in the last year Lauren said: "The majority of community ecology assumes that most interactions between plants are competitive, where plants compete for space, water, light, and other shared resources. However, research from my lab and from our collaborations have highlighted that across ecosystems ranging from the alpine to annual grasslands in Australia, approximately 1/3 to 1/2 of interactions between plant species are facilitative, where the presence of a species will increase the performance of others...As such, these facilitative interactions can aid plants in responding to ongoing global change threats, such as temperature and precipitation variability.

Lauren has recently received a new collaborative grant titled "The role of functional traits in population and community synchrony." This \$880,000 grant is fostering a new collaboration with researchers at the University of California, Davis and New Mexico State University."

In addition to research and teaching Lauren also is involved in outreach efforts. When asked about her outreach efforts Lauren said: "I am lead PI for the "Modelscapes Consortium," which is a group of faculty and postdocs from the University of Wyoming, University of Nevada, and University of Montana. We are collaborating to bring new statistical tools to address pressing questions in the Life Sciences and across scales of biological organization. As part of this group, we have adapted statistical methods called "sparse modeling" from their current applications in economics, signal processing, and evolution for the life sciences. Our group has developed a 4 hour workshop for other ecologists and life scientists addressing, when, why, and how to use sparse modeling."

Lauren had one PhD student complete their studies last year. Congrats to Janette Davidson and her hard work! Lauren has a vibrant and full lab. We can't wait to see what else Lauren has in store for the department!

Photos courtesy of Dr. Lauren Shoemaker & Dr. Brent Ewers

FOREST FORENSICS & DENDROSCIENCES LAB

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RESEARCH & STUDENT UPDATES

In a study published in *Fire Ecology*, Germain found that fire and diversity are good for some trees: the largest oldest trees survived best in burned areas with higher diversity because they were better able to fight bark beetles during the post fire outbreak. To see if benefits held for seedlings, Master's student, Sheryl Cramer conducted a follow-up study that found virtually no tree regeneration in the burned diverse areas because of shrub invasion. Sheryl will be defending her thesis this April



The Germain and Furniss lab graduate students collect post-fire data in Yosemite National Park



Left to right: Graduate students Jared Friedman, Tanner Gordon, and Emmanuel Komolafe inspect a tree core after sanding it

PhD student, Jared Friedman, has taken high resolution images of tree cores he collected last summer to understand why some trees die and other survive in Grand Teton National Park. Unlike a standard tree core, microscopy can measure drought stress, carbon sequestration, and hydraulic safety over time; all precursors to tree mortality



Master's student, Kelly Goodwin, records understory plant data under a dead whitebark in Grand Teton National Park

Master's student, Kelly Goodwin is measuring ecosystem effects of whitebark die-off in Grand Teton National Park. Last summer, Kelly found fewer understory plants near dead trees, which could open bare ground for invasive species. This summer, Kelly will bury 50 lbs of sand bags to capture mycorrhizal fungi, which are required for tree seedlings to grow and will help us understand forest recovery.

Other News:

Dr. Sara Germain's work on potential benefits of timber harvest is featured in a Cary Institute of Ecosystems Studies news article. Read it here: <https://www.caryinstitute.org/news-insights/feature/responsible-logging-can-help-northeastern-us-forests-adapt-climate-change>

Dr. Germain will also be featured in the next *Reflection Magazine*. Keep an eye out for it! Great work Dr. Germain!



Forest Forensics allows us to take a much closer look at tree rings to figure out why trees die and, more importantly, how we might be able to stop it

STUDENT & ALUMNI SUCCESS

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From left to right: Dillon Romero, Skyler Meinholz and Anne Beeman working in the field to assess vegetation composition and structure in a restoration treatment near Blacktail Butte in Grand Teton National Park

Dave Atkins, a Botany PhD student (featured below) is defending his dissertation on April 14, 2025. His research tested whether integrating functional traits into population models could predict fitness of grass species along gradients of precipitation in the ponderosa pine forests of Arizona. He found that leaf dry matter content, which is directly related to leaf turgor loss point explains survival rates and population growth rates. Dave has already published a paper in Ecosphere on using hand-held lidar to estimate herbaceous biomass, and will soon be submitting the rest of his chapters for publication.



34 Grad Students & Counting

The department can boast 34 current grad students and several incoming students for the fall. These students include both Masters and PhD students. Our program prides itself on the quality of graduate education and on the success of our students post graduation. Stay tuned for more graduate student and Alumni success stories in further issues.



Sienna Wessel, pictured above, received her MS in Botany in 2022. She was recently hired as the Botany Program Manager at the Wyoming Natural Diversity Database. Congratulations Sienna, and welcome home!

Anne Beeman a Botany masters student is defending her thesis on April 15th, 2025. She studied the response of native plants to sagebrush steppe ecological restoration treatments in Grand Teton National Park. She found that there are important trade-offs to consider when trying to establish sagebrush and bitterbrush. Sagebrush established best under no-till and see drill treatments, whereas bitterbrush establishes best in tilled soil using broadcast seeding. Her results will be used in future restoration treatments in the park.

ALUMNI WE NEED YOU!

Alumni, we want to hear your success stories! If you want to be featured, like Sienna, Please send a current photo, job position, brief description of your work, and accomplishments to botany@uwyo.edu. We would love to show how the University of Wyoming Botany program is positively impacting the world!

All photos on this page courtesy of Dr. Daniel Laughlin