



THE DEPARTMENT OF PLANT BIOLOGY, ECOLOGY, & EVOLUTION

Bluestem

Plant Biology
Ecology &
Evolution

INTRODUCTIONS

From the Department Head:



Dr. Andrew Doust

Hi, I am the new head of Plant Biology, Ecology, and Evolution (formerly the Botany Department). I started as Head in July this year, following the excellent leadership provided by our interim head Assoc. Dean Tom Wikle for 2016-2017, and, for the many years before that, by our own Prof. Linda Watson. I have taken over at a time when, despite the retirement of two of our most distinguished faculty (Regents Professors Mike Palmer and Dave Meinke), the department has a new sense of purpose and new directions for growth. This includes new courses, new options for the Plant Biology major,

and an increase in majors that are committed to the study of plant biology. It has been a while since our last newsletter, so I will recap some of what happened in that time-frame and highlight new directions.

Our faculty continue to produce excellent research, including 16 papers and book chapters and one book this year. Of particular note is the study on the physiological causes of tree death under drought conditions in *Nature Ecology and Evolution*, with 62 authors, headed by our newest departmental addition, Dr. Henry Adams. We have done very well in teaching also, with Dr. Janette Steets (see accompanying story) being awarded the inaugural College of Arts and Sciences General Teaching award, a testament to her leadership within the department on a Howard Hughes Medical Institute grant and for her tireless work to improve our undergraduate student success. In addition, our plant physiologist, Dr. Gerald Schoenknecht, is on a two-year secondment to the National Sciences Foundation in Alexandria, Virginia, where he is a rotation program officer for the Division of Integrative Organismal Systems. Sadly, though, we have had to say goodbye to two longtime and prolific departmental colleagues, Drs. David Meinke and

Michael Palmer. These two have been instrumental in the growth and success of the department, both in research and teaching, and their retirement is a sore loss. However, we are building on their legacy to promote our position as the foundational plant sciences department on campus.



Destiny Goree

In the departmental office, we have a new unit assistant, Destiny Goree, replacing Sarah Scroggins who has gone on to work in the Registrar's office. Destiny comes to us from off-campus, having worked in retail and the food industry, as well as with Head Start and Girl Scouts. She has been

instrumental in getting our new website completed and on-line, (plantbio.okstate.edu), and has tackled many jobs, including readying this Bluestem for publication. Our long term financial officer, Ann Yankunas, celebrates 20 years of service in the department (see accompanying story), and continues to quietly manage all of the finances of the department with great skill and efficiency.

Graduate and undergraduate achievements abound. Under the leadership of our advisor, Dana Hatter, and myself, we have recruited four undergraduate ambassadors (Adam Warren, Jordan Reed, Shauna Huff, and Kelli Norton) to promote plant biology and the Department at recruiting events. They have been great, changing minds and winning hearts, and one of them, Adam Warren, is featured in an accompanying story. Some of them have been recruited from the Plant Biology class (BOT 1404), where they and the rest of the 100-strong enrollment have been reveling in the challenge of designing, executing, and analyzing their own authentic plant growth experiments. These have culminated in very successful poster sessions in both the spring and fall. We have also revamped options available for the Plant Biology major, including options in pre-pharmacy and pre-law and environmental policy.

Graduate research and teaching has also been strong, with one highlight being the success of Bill Hammond, one of Dr. Adams' students, in both the 3-Minute Thesis and Research to App competitions (see accompanying story). The OSU Botanical Society has also been very active, with a photographic competition that has resulted in a beautiful calendar with plant photos. They have also hosted activities such as pumpkin carving for Halloween, where the artistic impulses of the students was stunningly displayed. We hope you enjoy finding out more about the department in the



Adam Warren, Jordan Reed, Shauna Huff, & Kelli Norton

following pages, and that you will consider supporting the mission of the department to promote and sustain plant research and teaching by donating at plantbio.okstate.edu/give.

Distinguished Alumna: Dr. Elizabeth Hood

In September, the department celebrated this year's nominee for distinguished alumni, Dr. Elizabeth Hood.



Dr. Elizabeth Hood

Dr. Hood is a Distinguished Professor at the Arkansas Biosciences Institute at Arkansas State University, Jonesboro, and runs two biotech companies. She and her husband, Kendall, visited OSU,

touring the departmental facilities and visiting old colleagues, as well as marveling at the rest of the ever-growing OSU campus. They were thrilled to be back and Dr. Hood said that she was deeply honored to be recognized as a distinguished alumna of the department, college, and university.

Outstanding Faculty: Dr. Janette Steets

Dr. Janette Steets is the inaugural winner of the College of Arts and Sciences Award for Excellence in General Education Teaching (2017). Associate Professor Steets started in the Botany Department at OSU in 2007, after a post-doc in Fairbanks, Alaska and graduate work at the University of Pittsburgh. Originally from western New Jersey, she is an ecologist, with a particular interest in plant ecological interactions and how they shape the evolution of plant traits.

Her undergraduate degree was at Muhlenberg College, a liberal arts college in Pennsylvania, where her experience of authentic research in a plant ecology class taught by Rich Niesenbaum transformed her initial

desire to become a medical doctor to becoming a plant ecologist. Eventually she did an undergraduate honors thesis on the effects of purple loosestrife (*Lythrum salicaria*) invasion on abiotic soil properties, which she presented at the International Botanical Conference in St. Louis. Her graduate work with Tia-Lynn Ashman at the University of Pittsburgh concerned the effect of herbivory on mating system evolution in *Impatiens capensis*, and her post-doc work with Naoki Takebayashi and Diana Wolf at the University of Alaska, Fairbanks, centered on leaf hair evolution in response to the abiotic environment in *Arabidopsis kamchatica*.



Dr. Janette Steets

Now she is a key partner in an international effort to understand the causes and consequences of pollen limitation of plant reproduction on a global and taxonomically diverse scale. Given global declines in bees and other insect pollinators, this work is especially timely and important as it will reveal the plant groups most at risk of reproductive failure as pollen receipt becomes more limiting. In Oklahoma, she has been particularly interested in the effect of invasive plant species on pollination and reproductive success of native species and on the role of plant-insect interactions in shaping mating system evolution in *Ruellia humilis*. She has trained multiple graduate students, but has had particular impact on the undergraduate learning experience. She is a co-PI in a large interdisciplinary

grant from the Howard Hughes Medical Institute to change the learning experiences of undergraduates in OSU's large lower division biology courses. In our department, that means BOT 1404 (soon to be P BIO 1404), our introductory Plant Biology course. For many years, this had been taught as a compendium of botanical knowledge, with labs that relied on prepared specimens, rote experiments, and fill-it-in worksheets. Dr. Steets, drawing from her liberal arts college background, was eager to transform the lab experience, with help from other faculty who taught this course, by introducing authentic research in the form of student-conceived and led multi week experiments. Steets is following this experience with a seminar course in which former BOT 1404 students are transforming the results of the BOT 1404 class research into a scientific paper. Dr. Steets has also transformed the assessment of undergraduate courses so that we now have a much better idea of what our students are learning and how we can do better.

Grad Student Spotlight: Bill Hammond

Bill Hammond is a second-year doctoral student in the lab of our newest faculty member, Dr. Henry Adams, working on new methods to measure tree death amidst climate change. He has been very successful in both funding and promoting his own research, perhaps because he is a somewhat unusual student! His early career was as a salesperson in a large technology chain, which allowed him to develop people skills as well as time management. He was also given the opportunity to move into leadership positions and teach other salespeople, which he really loved. However, at the age of 29, his wife asked him the question, "If they didn't pay you so

much money, is this what you would be doing with your life?" His answer was clear, no, he wouldn't be working in retail. He decided to enroll in a variety of classes at OSU OKC to see what his interests were. He took as many courses as he could online, but eventually ran out of options and realized that if he ever wanted to get a Bachelor degree he would have to go to classes full time two days a week. He transferred to UCO and that was when he took his first Intro to Biology course. After just a few lectures he decided that Biology was where he wanted to be. He had grown up around his grandfather on the farm, forming a deep connection with nature, and sitting in that Biology class rekindled his love of the natural world. The more Biology classes he took the more he felt this. He had found his passion, and realized that to succeed he would have to pursue a Ph.D.



Bill Hammond

Since he was new to biology, Bill wasn't tied down to any specific field of study, so he was able to leave his options open on where he wanted to go. He saw a flyer for the Environmental Ecological Lab ran by Dr. Henry Adams, in the Department of Plant Biology, Ecology, and Evolution, who is fascinated by the interaction of organisms with their environment. After a few email exchanges Bill and Henry set up a time to have a conversation over the phone.

That conversation lasted for hours and made up Bill's mind that he wanted to try OSU. After a visit, Bill committed to the Adams Lab and the Plant Biology Department because he appreciated the close-knit friendly atmosphere, the interest of faculty in their students, and the sense that it mattered to the department that Bill succeeded in his new venture.

Some of Bills' most recent accomplishments include the awarding of the McPherson travel grant of \$1,000 from the Plant Biology Department, an OSU Summer Graduate Research Fellowship (\$4,000), to support field validation of a predictive tree mortality model he built in the spring of 2017, and a \$1000 travel grant from the South Central Climate Science Center. This travel grant was awarded to support his oral presentation at the American Geophysical Union fall meeting this December. Also, the graduate college awarded a \$300 travel stipend for the same trip since he submitted a complete fellowship application to the National Science Foundation's GRFP. In November he won 2nd place in the 3MT (3 Minute Thesis) competition and was awarded with a \$100 travel stipend and \$950 in prize money. He is currently teaching a combined lecture lab Plant Biology course BOT 1404 with Dr. Henry Adams. To support more research like Bill's, please consider donating to the Botany Student Development Fund (plantbio.okstate.edu/give).

Undergrad Student Spotlight: Adam Warren

Our undergraduate spotlight this issue is on Adam Warren, who started life as an accounting major, but decided that he wanted to be involved in the life sciences. However, he traces his interest in plants back to growing strawberries with his dad in Edmond and to enjoying the plants around him

in the fields during his school cross-country running sessions. After encountering Dr. Janette Steets and plant biology in BOT 1404, Adam became deeply interested in plants and decided to become a Plant Biology major. This was both because plants were cool and because not too many people work on them, so that plant biology would be a good field to be successful in. Adam's vision goes further, musing about exploration of space, he says that understanding how plants work is important not only for sustaining life on this planet but for any hope of humankind spreading from this planet out into the solar system and beyond.



Adam Warren

Some other reasons why Adam is glad to be a plant biology major are the friendliness of the Plant Biology department and the enthusiasm of its professors and graduate TA's. After his research experiences in the new BOT 1404 Plant Biology lab course, he signed up with Dr. Steets for a second semester to co-write a scientific manuscript on his student research. He now wants to research more genetics and physiology topics with other professors in the department. But research takes money, and student



researchers often need help to achieve their aims. To help support students like Adam in their research experiences, please consider donating to the Botany Student Development Fund!

Administrative Spotlight: Ann Yankunas

Ann is our Senior Financial Assistant and almost our longest-serving member of the department, with only Dr. Henley of the active faculty having been here longer. She came to the department 20 years ago, from the Financial Aid Office, and having been in the Department of Statistics before that. She has a degree in Business Administration, and handles all of the financial running of the department, including travel, payroll, managing departmental and internal grant expenses, OK Corral, P-card, and Foundation accounts.



Ann Yankunas

She is married to Dan Yankunas, pastor at Solid Rock Church in East Stillwater, where they have been for almost 30 years. They have a son, Austin, who finished two years of an architecture degree at OSU before now completing a music production degree at the University of Central Oklahoma. Ann has seen big changes in the Botany Department (now the Department of Plant Biology, Ecology, and Evolution),

starting in a time where there simply were no credit cards, and all purchases were done with purchase orders. There has been even more change over the last five years, with the department moving to occupy space in three separate buildings, and with the moving of her long-time unit administrative counterpart, Paula Shryock, from Botany to the Board of Regents offices. Being in three buildings, coupled with the huge

increase in electronic systems and corresponding decrease in university mail, has led to fewer personal visits by faculty and students to the departmental office, but the department remains for her a collegial and understanding environment to work in. And, she says, it hasn't been that difficult, there have been no totally unreasonable faculty or department heads to work with (yet!). It is, in fact, due to Ann that we have

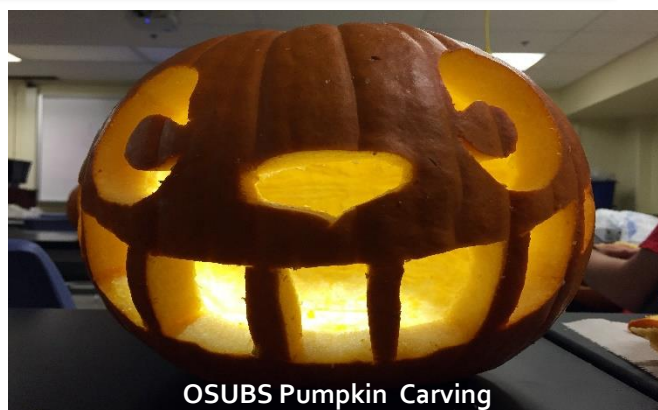
weathered so well changes in unit assistants, department heads, and departmental spaces! She has been the bedrock of the departmental office, and, by extension, of the department as a whole, and her quiet demeanor hides a fierce determination to do the absolute best in her job. She has worked part-time for all of her twenty years here, but does the job of a full-time person!



Recent graduates Angela McDonnell, Justin Dee and Nicole Parker, with Prof. Mark Fishbein



Undergraduate Molly Haddox



OSUBS Pumpkin Carving



OSUBS Pumpkin Carving



Distinguished alumna Prof. Elizabeth Hood with Andrew Doust, Yisel Carrillo, and Kendall Hood

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Plant Biology, Ecology, & Evolution

Oklahoma State University Department of PBEE 301 Physical Science

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