University of Wyoming
College of Agriculture, Life Sciences and Natural Resources

ag news

VOLUME 31 • 2023 ANNUAL

UW Meat Judging Team Competes in International Conference

An Opportunity of a Lifetime

What Students Can Learn from Planning a Fashion Show

The Answer May Be Surprising

Tinting Turbines for Bug Benefits

Research Points to an Easy Way to Increase Wind Energy Output and Conserve Birds and Bugs

agnews

2023 Annual
Volume 31

Editors
Brooke Ortel
University of Wyoming Extension

Maya Gilmore
University of Wyoming Extension

Graphic Design
Jeremy Cain
University of Wyoming Extension

The AgNews annual edition is a compilation publication featuring stories from uwagnews.com. The website and magazine are published as a cooperative effort of the University of Wyoming College of Agriculture, Life Sciences and Natural Resources, the University of Wyoming Extension, and the Wyoming Agricultural Experiment Station.

Direct magazine and website inquiries to:
uwe-ct@uwyo.edu

On the cover:
Zzzdim - stock.adobe.com
Kasia Biel - stock.adobe.com
Composition by Jeremy Cain

FEATURES

Teaching, Research, & Outreach Empower Tomorrow's Leaders

Barbara Rasco
Dean, UW College of Agriculture, Life Sciences and Natural Resources

It fills me with great pride to reflect on the exceptional accomplishments of our vibrant community in the College of Agriculture, Life Sciences and Natural Resources. At our core, we prioritize teaching, research, and outreach as powerful tools to shape tomorrow's leaders and positively impact our state. Our research and knowledge dissemination creates a positive ripple effect, advancing economic and cultural vitality.

Our dedication is evident through initiatives like Wyoming 4-H, where volunteers, educators, and partners collaborate to empower youth, fostering compassion, hard work, and responsibility. Our commitment to student development continues on campus, offering diverse programs with dedicated faculty support.

From fashion runways to internships and independent research, our students excel locally and globally as emerging professionals. This year, our nationally competitive meat judging team was the only U.S. team invited to Australia's Intercollegiate Meat Judging Association Conference.

To date, 16 interns have graduated from our GrowinG Internship Program for prospective farmers and ranchers, with several returning sponsors. For participants who are also students, the program bridges the gap between academics and real-life ranching.

The growth we aspire to see in our students is exemplified by Chelsea-Victoria Turner, one of only 55 Udall Scholars in the country and a UW senior majoring in plant production and protection. She overcame significant obstacles to pursue her career in plant sciences with an emphasis on invasive plants.

UW professors, educators, and students drive innovation in labs and fields. From studying insect interactions with wind turbines to carbon capture on rangelands, our community pioneers solutions that positively impact our world. We help maintain biodiversity, conduct groundbreaking climate research, provide essential data for rotational grazing management, and extend growing seasons with geodesic domes.

Our research and extension centers and many faculty, staff, and students are also engaged in addressing food security issues through contributions of food, time, expertise, and funds.

As a land-grant institution, UW is committed to expanding intellectual opportunities and contributing to the well-being of Wyoming communities. We take immense pride in growing people, knowledge, and communities.

Internship Program Yields a Successful Second Season

After only its second year, the innovative GrowinG Internship Program is already growing in new ways.

The program is designed to prepare a new generation of farmers and ranchers for success. It gives prospective farmers and ranchers valuable on-the-ground experience and offers hosts a chance to shape the future of Western agriculture, as well as a little extra help.

Interns are matched with a host farm or ranch, which provides room, board, and mentorship for 10 weeks. The GrowinG program provides interns with a $5,000 stipend paid over the course of the internship, and interns can also arrange to receive college credit.

The program has been very successful so far, with 16 graduates and several returning hosts.

Diverse perspectives

When people hear "intern," they tend to think about academics—but not everyone who participates in a GrowinG internship is a UW student, or even a student at all. To apply, interested parties must be at least 18 and must have fewer than 10 years of agricultural ownership experience.

That allows for a huge range of applicants. John Hewlett, the program's co-director, says, "We've been surprised in nearly every direction you can imagine!" Interns have included community college students, veterans, and students from as far away as Hawaii and Virginia.

Kendra Faucett, the program coordinator, mentions that this diversity of perspective is one of the program's greatest strengths. Interns come from a variety of backgrounds, and those who have experience in the agricultural industry often learn new approaches.

For example, Josie Sackett, one of this summer's interns, was familiar with herding cows with four-wheelers or ATVs back on her family farm in Iowa, but found that herding on horseback spooked the cows less. "Honestly, after gathering cattle with horses, I like it a lot better," she says.

Flexibility doesn't stop at the activities offered, either. Hosts must be able to provide room and board, but otherwise the field is wide open to any kind of operation. "We're not small-minded in what we're looking to offer in our program," says Faucett. "We're open to farms and ranches of any size."

Lessons learned

Olivia Halter, a UW junior, emphasizes that the lessons she learned this summer weren't just about ranching. Her hosts talked about taking time off when possible and prioritizing your own health. "You need to know your limits," she says. "Take the time when you can."

The program helped her develop a more solid five-year plan. Though she's not planning to run a ranch herself, Halter is passionate about the future of agriculture. "I want to advocate for making sure people know what is going into their food, and how much work it takes to make food. I would feel better leaving a world where people know they can go into ranching and make a profitable living off it."

The GrowinG Internship Program requires that each intern write a work summary every week. Check out the Intern Tales at https://growing-wy.org for stories about driving demo rakes, taking meat and milk to the local farmers' market, working together to brand cattle, and more.

Faucett and Hewlett aim to keep growing the GrowinG Internship Program. It is currently grant funded, but Hewlett hopes to secure long-term funding in order to support more interns, more lessons, more sessions—and a bright future for agriculture in the West.

"I've been blown away at the level of support that people have expressed for a program like this," says Hewlett. "It clearly makes a big difference to individual interns' understanding, and gives a deeper respect for what it requires to be on top of everything in today's environment."

Sackett sums it up: "If you're thinking about applying, go for it! It's nerve wracking, but it pays off. You look back and see all the new doors that have opened."

For more information, visit https://growing-wy.org or contact Kendra Faucett at coordinator@growing-wy.org with questions.

— Maya Gilmore
University of Wyoming Extension

Photo by Olivia Halter.

Photo courtesy of Josie Sackett.

Photo courtesy of Isabella Shultz.

You can get involved in the GrowinG Internship Program by submitting an application for next summer, donating, or checking out growing-wy.org. Host and intern applications must be received by Feb. 2, 2024, to receive full consideration.

Photo courtesy of Isabella Shultz.

Photo courtesy of Isabella Shultz.

Photo by Tanya Engel.

FOUNDATIONS

4-H funding unlocks opportunities

Though most Wyomingites are familiar with 4-H, they may not be aware of the Wyoming State 4-H Foundation, the organization that provides financial support for 4-H programming across Wyoming.

The 4-H Foundation receives funds, contacts donors, and administers grants across the state. The foundation focuses on four core areas: 4-H programming, scholarships, out-of-state trips, and awards and recognition. Through the foundation, 4-H youth are able to not just show livestock or learn about woodworking, but also build robots, apply for a state 4-H leadership position, and even attend international conferences.

Long before experiential learning became a buzzword, 4-H educators and volunteers understood that kids learn best by doing. "It's uplifting to know all the research and science behind positive youth development has been reinforced," says Johnathan Despain, state 4-H coordinator.

4-H gives kids the chance to develop confidence and try out new skills in a supportive setting. "We intentionally create opportunities that offer a sense of independence, belonging, generosity, and self-confidence," Despain comments.

Garett Schamber, a senior at UW, got involved with 4-H when he was eight. "I learned a lot of valuable lessons through 4-H," he says. In particular, he learned hard work and time management, which have made it much easier for him to move through college.

"4-H is the first interaction a lot of kids have with the University of Wyoming," says Steve Mack, Wyoming State 4-H Foundation director. "We hold a couple of events on campus, and that's their first glimpse at UW and what it has to offer. You hope it makes a big enough impression that they want to become students here."

The foundation directly impacts Wyoming college students through scholarships. During the 2023–2024 academic year, the 4-H Foundation awarded more than $64,000 in scholarships to Wyoming 4-H'ers attending the University of Wyoming or a Wyoming community college.

The Ella Schloredt scholarship, for example, currently funds more than 20 full-time UW students. Every year, the 4-H Foundation selects six to eight new students to receive the scholarship. Past winners can remain eligible for up to four years.

The 4-H Foundation is always looking for new ways to support positive youth development and increase access to opportunities, and its impact isn't limited to children ages eight through eighteen. Through the foundation and the opportunities it opens up, 4-H youth build foundations for life.

— Maya Gilmore
University of Wyoming Extension

Wyoming 4-H'ers participate in a robotics competition at Showcase Showdown in Laramie. Photo by Tanya Engel.

UW Student Earns Prestigious Udall Scholarship After Life of Personal Challenges

Chelsea-Victoria Turner

Five years ago, Chelsea-Victoria Turner was battling drug and alcohol addiction while living on the streets of Cheyenne.

It got worse. She ended up spending time in jail.

This spring, the current University of Wyoming senior became a 2023 Udall Scholar, one of just 55 people nationwide to receive the award this year.

Each year, the Udall Foundation awards scholarships of $7,000 each to college sophomores and juniors for leadership, public service, and commitment to issues related to Native American nations or to the environment. Within the Department of Plant Sciences, Turner is majoring in plant production and protection, with a concentration in agroecology and evolution. She also is pursuing minors in botany and soil science.

"Receiving this scholarship is like a nod of approval from the universe, for which I am so grateful. This scholarship means that we do recover, and life transformational changes are possible," Turner says. "This means that I can be the person that my loved ones always knew I could—which means I have made them proud. I have made myself proud. I still can't believe it, but I am grateful from the deepest part of my soul out to my fingertips and will continue with the gratitude of this blessing forever in my heart."

"Udall Scholars are remarkable because of their palpable desire to impact our world," says John Koprowski, dean of the Haub School of Environment and Natural Resources who served as the lead on the Udall Scholar nomination process for UW. "Chelsea-Victoria presented such a compelling and, truthfully, inspiring case of her passion to make a difference in the challenges that our environment faces in the future with the commitment forged by the challenges of her past. One can only be optimistic about our future when such talented and dedicated scholars are revealed."

Environmental energy

In her time at UW, Turner has an extensive list of environmental research activities in which she has participated.

From fall 2021 until she moved to Laramie during summer 2022, she worked for UW's Sheridan Research and Extension Center (ShREC) under Donna Harris, a UW assistant professor of plant sciences, and Brian Mealor, a professor of plant sciences and director of ShREC.

Over the cooler months, Turner helped Harris grow beans and peas in the greenhouse to have more seeds for planting. When spring arrived, those seeds were grown in the field.

"Dr. Harris is looking at a variety of things, such as which pea species are the most drought-tolerant and are the best nitrogen fixers," Turner says. "While working at ShREC, I also was able to go into the field to do invasive grass mapping since some new, nasty invasives have been found in Sheridan County. I also was able to be a part of the native seed program where we would scout for the desired native plants and then return to those areas when the seed was able to be collected."

"Chelsea's passion for the environment and sustainable management intersects

UW student Chelsea-Victoria Turner pauses during a hike that was part of last year's annual meeting of the Wyoming Native Plant Society. Photo by the Wyoming Native Plant Society.

Chelsea-Victoria Turner during the 2023 Udall Scholar Orientation. Photo courtesy of Chelsea-Victoria Turner.

with her true love of learning, which allows her to succeed in her academic pursuits," Mealor says. "She thinks deeply about her relationship to the natural world and society—especially how she might go about to better the lives of others by what she learns. During her time in our program, she gave me the opportunity to think about my science, and its communication, through a different lens. I look forward to watching her excel in her career moving forward."

When she moved to Laramie from Sheridan, Turner was hired as a research assistant in both Linda van Diepen's soil ecology lab and Kelsey Brock's invasive plant informatics lab. For van Diepen, a UW associate professor of ecosystem science and management, Turner looked at mycorrhizal colonization in the roots of plants sampled from both herbicide-treated and untreated areas. For Brock, a UW assistant professor of plant sciences and extension weed specialist (invasive plants), Turner helped compile lists of invasive plants from areas that have a similar climate to Wyoming. The goal was to determine whether any of those plants could be potential invaders in the state.

"She is one of the most driven and hardest-working people I have ever met," Brock says of Turner. "She does research in multiple labs; teaches; acquires new employable skills; tackles multiple degree majors; and sets wheels in motion to plot her career trajectory far in advance.

"Chelsea possesses a breadth of knowledge and creativity that allows her to envision unique ways to address environmental problems," Brock continues. "Her plans often span multiple scientific disciplines and engage the community with genuine human warmth. I am excited to follow her career and watch her put these ideas into practice, and I am grateful to the Udall Scholarship for supporting the development of an excellent scientist."

As if she isn't busy enough, Turner also volunteered at the Rocky Mountain Herbarium on campus before she was hired there. "I love being in the herbarium," says Turner. "It's my happy place."

Over the summer, Turner took part in a research project for the herbarium. The project's purpose is to look for climate change refugia areas in the Big Horn Mountains. To accomplish this, Turner helped collect specimens from three elevational gradients with specific topographic features that a previous research paper determined may be able to create areas of climate change refugia. Then, these collections will be compared to collections done 40 years ago in the same location. Turner has spent the fall semester sorting and identifying these plant samples.

This summer, she also worked for Piney Island Conservation Services, a restoration company based out of Story. She participated in a project to plant more than 6,000 plants in Badlands National Park. Over five trips and 15 maintenance trips, Piney Island Conservation Services has been creating healthy native ecosystems in South Dakota. Turner says,

“Chelsea’s passion for the environment and sustainable management intersects with her true love of learning.”

"I loved every second I have spent working in South Dakota."

As part of her Udall Scholar award, Turner spent five days in Tucson, Arizona, at a scholar orientation, where scholars extend their professional network; meet other scholars and alumni; and learn new skills. "I got to meet so many amazing people. I fell in love with Arizona too." Turner highlights meeting one of her heroes, Katy Ayers, who also won a Udall scholarship, and visiting the Arizona-Sonora Desert Museum.

The environmental issue that most concerns and interests Turner is invasive plants.

"Invasive species are a threat to the stability of our native ecosystems and cause massive economic damage," Turner says. "I love Wyoming in all its beauty and want to protect the organisms in our state."

Hard times

However, Turner's life was not always heading in such a positive direction, as she once fell victim to other kinds of invasive species. She started drinking alcohol at age 11, a habit that lasted until she was 20. She dabbled with party drugs and then graduated to what she described as "slightly harder stuff and pills."

"Then, at 20, I started doing heroin via IV. Four years later, I mixed in meth with the heroin and, by the time I got arrested, I had been a transient for two years and was doing meth, heroin, and cocaine all together in one shot. And I was doing Xanax," Turner recalls. "So, it's really a good thing that I got arrested."

While she was in the Laramie County Detention Center, matters only got worse. Her dad died of alcoholism in 2017. While her mother, Cindy; Gayle, her grandmother; and Andrea, a friend since childhood, stood by her through thick and thin, Turner was still living a lonely existence behind bars.

"I swear I looked in every dark, filthy nook and cranny searching for love and validation," she says.

She found an unlikely friend in the jail sergeant, who ran the inmate labor program. Turner had applied repeatedly to become involved with inmate labor, but she was denied because of fights she had with other inmates.

While Turner was receiving a routine health check, the sergeant overheard Turner talking about wanting to better herself.

"From the conversation, he decided to let me into inmate labor. He was the first person out of many whose belief in me set me onto the next stone in my path," she says. "From there, the deputy who oversaw the inmate labor blocks acted like a hard ass but also made it very clear that, if any of us needed him, he was there. I took this opportunity to go to him for guidance."

As a result, Turner decided to ask a judge for the opportunity to go through a treatment program. In January 2019, she arrived at Volunteers of America, a treatment center in Sheridan. By April of that year, she had successfully completed her treatment program, was hired by Landon's Greenhouse in Sheridan, and followed up with treatment through several voluntary outpatient groups and therapy meetings.

"I stayed in Sheridan for four years. I fell in love with it there," Turner says. "That's where I fell in love with nature."

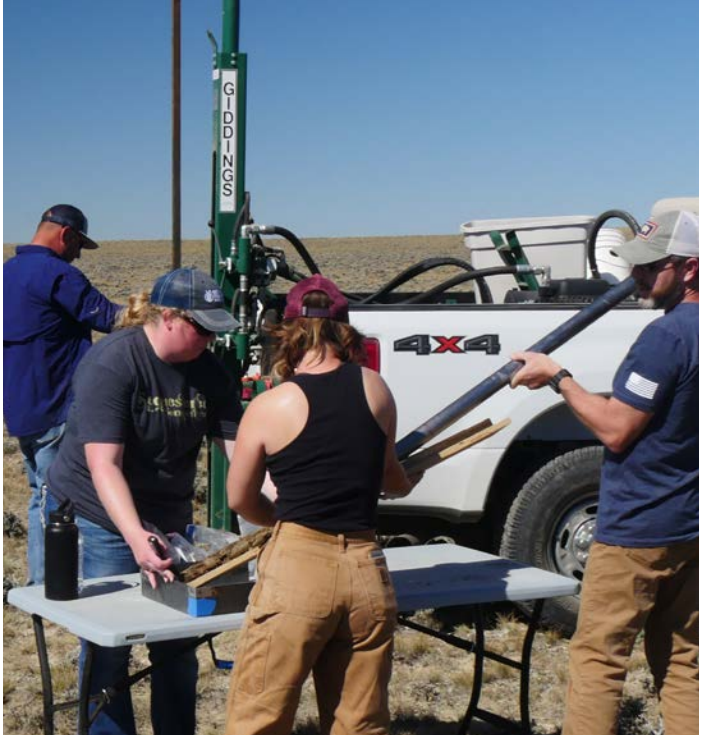
Despite ongoing hardship, Turner's love for nature and her deep dedication continue to shine through in everything she does. Looking back at where she was five years ago, her journey is all the more inspiring.

"Most people didn't even think that I would be alive today, let alone to be the recipient of such blessings," Turner reflects. "If you had told me, I wouldn't have believed it."

— Ron Podell
Communications Specialist,
UW Institutional Communications

Chelsea-Victoria Turner collects plants for the Rocky Mountain Herbarium and passes on scientific knowledge to a new generation. Photo courtesy of Chelsea-Victoria Turner.

Wyoming Researchers and Ranchers Contribute to International Rangeland Study



Taking preliminary soil samples at McGuire Ranch in June 2022. Photo by David Keto.

It's a typical late summer day at the University of Wyoming's McGuire Ranch, located outside Laramie: hot, windy, and devoid of shade. Dotted across the landscape are the familiar black specks of grazing cattle, a lone windmill—and an international team of scientists. They're setting up monitoring equipment and collecting baseline data for a five-year, multi-state study on rangeland soil health.

The project, titled "Metrics, Management, and Monitoring" (3M) investigates how cattle grazing management influences soil health and carbon storage. Launched in 2022, it brings together 11 public universities, private research organizations, and nonprofits in the U.S. and U.K.

The goal is to use quantitative data from sites across the U.S. to better understand how rangeland management decisions affect soil health, carbon storage, and socioeconomic conditions.

"This is applied ranch research," says Derek Scasta, UW Extension range management specialist and Wyoming project lead. "It's relevant to the types of country and operations we have in Wyoming and will generate insightful information we haven't had before."

Ultimately, the researchers seek to develop region-specific management suggestions to optimize environmental and economic productivity, create accessible tools to track soil health, and build models predicting trends in water and nutrient cycles.

By quantifying how grazing management affects carbon sequestration, the study may also help Wyoming ranchers capitalize on the growing market for carbon credits.

"We're dealing with the current issues of our day," Scasta explains. "Some of the technology in ranching is always going to be relevant, like a good saddle and a good rope. But our grandfathers weren't as worried about soil carbon, scrutiny from environmentalist groups, and other emerging challenges."

The project has received more than $19.5 million in funding from the Noble Research Institute and the Foundation for Food and Agriculture Research.

Under Scasta's direction, the McGuire Ranch has been transformed into a premier research site outfitted with soil water sensors, infrared remote game cameras, towers to measure carbon dioxide flow, and handheld near infrared spectrometers to estimate forage quality. Additional infrastructure updates include the installation of 12 miles of fence line, a new well, a ¾-mile pipeline, and 3 water tanks.

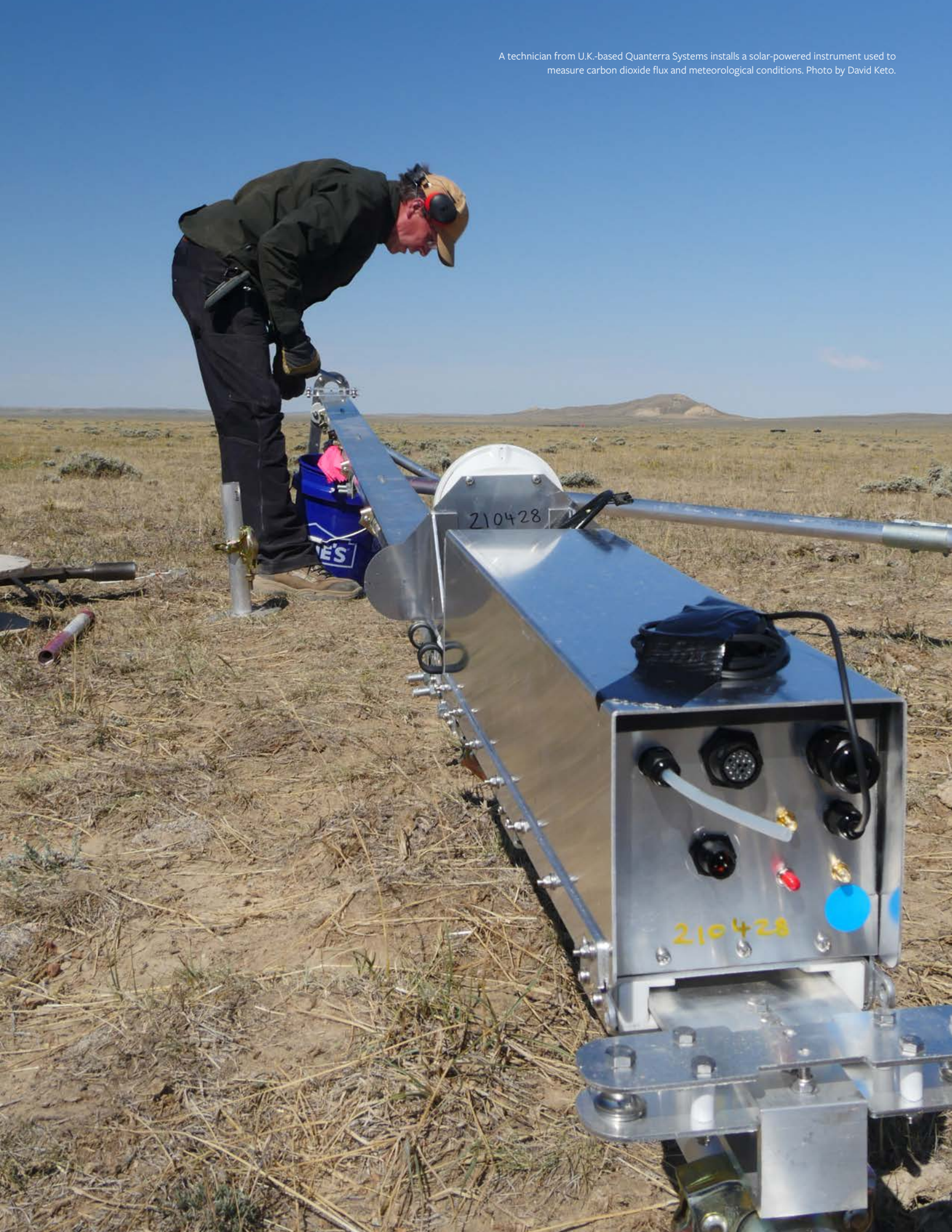
Grazing treatments at McGuire began in summer 2023 with a total of 202 cow-calf pairs organized into six herds. Half the cattle were organized into five herds, each of which was small and lightly stocked. The other half comprised a single large herd, rotated every one to three weeks using adaptive management practices.

In addition to monitoring soil health at McGuire, Scasta's team is working with 11 Wyoming cattle operations to collect data on their land. An additional 49 ranches in Colorado, Oklahoma, Texas, and Michigan are also involved in the study.

Producers who choose to participate have access to soil health metrics and management recommendations specific to their operations. In the project's second phase, ranchers will also have the option to participate in a sociological study examining how grazing management affects socioeconomic well-being.

To learn more about the 3M project, visit www.noble.org/3M. For those interested in participating in the study or touring McGuire Ranch, contact Scasta at jscasta@uwyo.edu or (307) 766-2337.

— Brooke Ortel
University of Wyoming Extension



A technician from U.K.-based Quanterra Systems installs a solar-powered instrument used to measure carbon dioxide flux and meteorological conditions. Photo by David Keto.

A KALEIDOSCOPE OF LESSONS

What Students Can Learn From Planning a Fashion Show

A class in fashion show planning? For those unfamiliar with UW's design, merchandising and textiles program, the offering may come as a surprise. But, as students can attest, the course is about more than walking down the runway.

It's also about effective leadership and collaboration. "It is amazing to see what a group of young adults can do together to create a big show," says Alyson Dewberry, a recent graduate of the design, merchandising and textiles program and co-producer of the 2023 show. "I was surprised at what I could do myself with the contacts I made and what an impact I made."

The fashion show planning course, housed in the Department of Family and Consumer Sciences, is offered every spring and culminates in the student-run Kaleidoscope Fashion Show. Students are responsible for the entire process—planning, setup, and execution.

"This class functions differently than any other class," says Erin Irick, associate professor and unit coordinator of the design, merchandising and textiles program. "I tell the students on day one that this is ultimately their show."

The goal is to provide students with real-world experience in event planning, especially in the realm of fashion design. Learning opportunities center on garment and model organization, production and scheduling, budgeting, promotion, and runway design.

"We balanced working with a budget, strict timelines, differing opinions and ideas, a variety of levels of interest across classmates and community partners, all ensuring that the show was just as successful as past years," says Jenna Holyfield, a family and consumer sciences major and co-producer of the 2023 event.

Each student takes on different responsibilities through involvement in a chosen committee, Irick explains. Committee options include stage management, promotions, production, and model/garment.

At the beginning of the course, Irick offers several lectures on different types of fashion shows and the essential components of a successful show. For the rest of the semester, class meeting times are discussion based, allowing students to both engage with the larger group and work within their respective committees.

On a spring evening in April 2023, months of preparation came together in a swirl of colorful outfits and bright smiles.

"I was proud to see three months of planning and preparation come together and watch the attendees enjoy the show," Holyfield comments. "I also loved seeing the designers and models full of excitement to show their work because, after all, the show was for them and their art."

Dewberrry agrees. "My favorite part was seeing how the show came together after a semester of hard work," she says. "It was hard being a 22-year-old and overseeing other adults and everyone involved, but it gave me a lot of experience."

That's part of what makes the class unusual—and relevant beyond the runway.

"This class teaches the students self-awareness, accountability, teamwork, and communication," Irick notes. "All these personal skills will serve them well no matter what their future career."

To learn more about UW's fashion show planning course, contact Irick at eirick@uwyo.edu.

— Brooke Ortel
University of Wyoming Extension

The Union ballroom was awash in a swirl of colorful outfits and bright smiles at UW's 2023 Kaleidoscope Fashion Show. Photo by David Keto.

Geodomes Nourish People & Plants in the Wind River Community

In less than two years, more than seven geodesic dome greenhouses have popped up on the Wind River Indian Reservation. These domes were built by the Wind River community, for the Wind River community. They provide space for growing plants and healing people.

At the heart of the project is Darrah Perez, a grower of gardens, greenhouses, and community.

Perez is an enrolled member of the Blackfeet Nation in Browning, Montana, and her tribal affiliations include Northern Arapaho and Eastern Shoshone. Over the years, she has worked with various partners on projects supporting home gardening, food sovereignty, and sharing traditional knowledge.

During the Covid-19 pandemic, her community faced not only uncertainty and the loss of loved ones, but also food insecurity and mental health challenges. Perez knew she had to do something to help.

She chose to offer support through home gardening. She and a small group of friends fundraised to provide gardening supplies and education to communities on and near the reservation.

Geodome build at the Northern Arapaho Tribal Historic Preservation Office (THPO) in Riverton. Photo by Darrah Perez.

"We learned to utilize Zoom and figured out how to connect even if we couldn't see each other face to face. It started with weekly events and planting things," she recalls. "We took it a step further and started including our traditional knowledge. A lot of it was to keep people's minds preoccupied, not focusing on Covid."

Grow our own

As co-founder of a local nonprofit, Perez helped her community navigate food insecurity and the mental and emotional turmoil sparked by the pandemic. Her approach centered around gardening, cultivating medicinal plants, and sharing the traditional knowledge of local tribes.

"I found my passion and was able to include my passion for writing with taking care of plants and caring for community," Perez says. "I wanted to help everybody because I saw we were losing many people to Covid. It was a big tribute for me to be able to do that."

The nonprofit, known as Wind River Grow Our Own 307, provided seeds, soil, and garden boxes to those interested in growing their own food. Perez and her fellow gardeners also planted trees and medicinal plants, reconnecting with traditional practices. Through gardening, they created a network for people to learn together and support one another.

As the gardening project grew, Perez launched a new initiative focused on the construction of geodesic domes.

Why geodomes?

It wasn't just for the looks (or the fascinating construction process). Geodesic domes are well suited to Wyoming's fickle climate. They're sturdy and can weather snow, hail, and wind, perfect for sheltering plants and extending the growing season.

"If you're a gardener—and even if you're not—it's very easy to grow in them," says UW Extension educator Jeff Edwards. "Geodomes allow the growing season to go much longer. Tomatoes, peppers, and cucumbers grow really well in geodomes, but you can grow pretty much anything: carrots, sweet corn, cabbage, broccoli, beans, strawberries, raspberries, salad greens."

Just don't overplant, he cautions. Also, keep in mind that geodome gardeners are not exempt from weeding, watering, and general upkeep.

All the parts and pieces

Perez met Edwards at a geodome build in Sundance, Wyoming. "Jeff came with a kit, we put it together—it was amazing to see it go up, from base to door to top," she recalls. "Seeing all that transpire, I had a vision of seeing more of those domes on the reservation, more people benefiting from them."

In 2021, she traveled to Edwards' workshop for an immersive multi-day tutorial on how to fabricate and assemble a geodome kit. Under Edwards' guidance, she learned how to construct a dome's wooden skeleton and "skin" the structure (i.e., securing the dome's woven polyethylene plastic "skin" onto the frame).

"We spent three days building the parts and pieces for three geodomes," says Edwards. "Then they took the kits back to the reservation and we arranged for me to come assist them in building their first one."

Working with the Longmont Sister Cities Association in Colorado, Perez secured a $30,000 Dream Offering grant to build six geodomes on the reservation. The grant included stipends to compensate community members for their work. "A lot of our community deals with poverty issues. This may have helped in ways they're forever grateful for," she reflects.

But the project's impact extended beyond work stipends. "It helped give them confidence that they can build things. A lot of people think they can't do that and giving that confidence was a booster for the community," says Perez.

Perez and other volunteers assist UW Extension educator Jeff Edwards with a geodome build in Sundance, Wyoming. Photo by Steve Miller.

The first installation took place at the Doya Natsu Healing Center, formerly known as the Eastern Shoshone Recovery Center, in Fort Washakie. The center now uses the dome to grow food and medicinal plants, including sweetgrass, sage, and mint.

A second geodome was installed at the St. Stephens Indian School on the Wind River Indian Reservation; another was constructed at the Early Intervention Program in Fort Washakie.

Patience and persistence

To successfully build a geodome, a person needs not only the proper materials and tools, but also a healthy dose of patience, a team of at least four people—and the confidence to get started.

"One thing I realized is that it takes a lot of time and attention. You have to have a lot of patience," Perez notes. "The very first dome, we had about nine holes in the top, having punched through it with the screw bit. By the time we built the last one, though, we were so perfect that there was no hole."

Edwards says it's a three-time rule. "If somebody is really wanting to do this, it takes the repetition of about three structures in order for them to get comfortable."

Perez passed the three-time mark and kept going. So did Edwards, though his journey began a few years earlier. His first dome build involved a pre-made kit and a set of instructions that had everyone scratching their heads in consternation.

By the time he met Perez, Edwards was crafting his own kits and leading geodome builds across the state. He recently created "a construction manual for everybody," a set of instructions for building a 22-foot geodesic dome with about 355 square feet of farmable space.

The components can be prepped by one person for assembly in about 30 hours; final on-site assembly requires about eight hours and at least four volunteers. The Wind River geodomes built under Perez's supervision were constructed using a similar model.

Now an expert dome-builder, she's looking forward to continuing the project. "I have big plans and big dreams," she says. "I would like to build more domes and teach more interested individuals alongside Jeff Edwards for a larger audience upon the reservation and throughout the state of Wyoming."

— Brooke Ortel
University of Wyoming Extension

UW Meat Judging Team Competes in International Conference

This summer, University of Wyoming's meat judging team had the opportunity of a lifetime—the chance to attend Australia's Intercollegiate Meat Judging Association (ICMJ) Wagga Conference in Wagga Wagga, New South Wales.

UW meat judging team at the 2023 ICMJ Wagga Conference. L–R: Kyle Phillips (UW meat lab manager), Jake Gillespie (graduate coach), Joseph Kennah, Abby Vogl (assistant coach), Tessa Maurer, Kara Reynolds, Rachel Broyles, Madeline Holmes, Ashlyn Manuel, Kylie Strauch, Haley Rutsch, Casey Spencer, McKensie Phillips (meat judging team coordinator).

Meat judging is a unique extracurricular. In the United States, students start training in November for a season that begins in January. For one year, each student is eligible to participate in national competitions where they rank cuts of meat. In different divisions, they might assess the amount of marbling present or grade beef carcasses according to USDA standards. Those students who most accurately assess the cut's qualities can place in a division, and the team whose members collectively do the best win the competition.

But Australia's international competition is different, and it's not just the cuts. Though Australia does have different standards for judging a piece of meat, the biggest difference is the culture.

Cultural exchange

Australia's meat judging culture is focused on career development and finding a job. Most of the Australian students had been intermittently studying meat judging for two months and were in their final year of university. The contest was a bonus, rather than the core of their meat-judging experience.

Many of the Australian students were blown away by the UW team's focus and intensity during the competition. "Some of Australians were really nervous. I think they really valued seeing the U.S. students be in a mindset and just compete," says McKensie Phillips, UW collegiate meat judging team coordinator.

Several students professed a desire to go back to Australia, and that's not surprising. Within minutes of arriving at the

conference, several Australian meat judging students came over and introduced themselves. The UW team got to know about 95 percent of the other students participating in the conference, and have stayed in touch. Haley Rutsch, an animal and veterinary sciences major, even mentioned that she's going to ship snacks to some of her new Australian friends. "They'll get to experience Twinkies," she says.

Comeback tour

In 2022, UW didn't have a meat judging team. The "comeback tour" in 2023 started strong, with ten students joining UW's meat judging team in a state where the norm is five to seven. The team won its final spring competition at Iowa State University after months of individual and team successes.

Then, the recently revived team was invited to the ICMJ Wagga Conference. Only one meat judging team from the United States is invited per year, and the UW team last attended in 2010. Every person on the team put in a lot of work to create this opportunity, and their motivation and performance paid off.

Rutsch says, "Getting to experience Australia and all it has to offer was amazing, really eye-opening, and our team really benefited."

The UW team competed against eight Australian teams. Four of the nine students who traveled to Australia found out the night before the competition that they would be competing as well, as Australian attendance was lower than anticipated. Even the five students who planned to compete learned most of the Australian standards in the month leading up to the conference and on the plane ride there.

Despite this, two UW students placed in a division. Joseph Kennah placed fourth in the beef judging division, and Kara Reynolds placed second in the commercial evaluation division. "It was cool to pick up that much information that quickly. We were there to have fun and learn new things, and I was super thankful for the opportunity," she says.

Professional perspectives

For the first few days of the ICMJ conference, students participated in workshops and listened to guest speakers from various industries. Speakers included graziers, feedlotters, butchers, and even the CEO of Gundagai Meat Processors, a major lamb producer in Australia. Several students emphasized how valuable it was to get a global perspective on industry techniques and technologies.

The presenters didn't just give students practical meat judging tips or talk about their companies. They consistently brought in professional development and career advice. Abby Vogl, the team's assistant coach, says, "It was awesome to see the support that industry in Australia gives these students."

> **"We got to do so many things together, and I think everyone got something from this trip. We got out of our comfort zones. It was a once-in-a-lifetime experience."**

The UW team also got the chance to speak to producers and other employers at the career expo. Every student was approached with at least one career option, and one student received three job offers. Another student is planning to go back to Australia after she graduates in May 2024 and work for an employer she spoke with there. "Any student that went into that career fair could have gotten a job, because the Australian meat industry knows that's where the talent is," says Phillips.

Meat judging opens up dozens of career options. The most direct option is working for the USDA, or the Australian equivalent, Meat Standards Australia, but other career paths include nutritional consulting, veterinary science, or becoming a product quality and safety specialist.

Beyond the conference

After the conference and two-day competition, the UW team spent a week visiting agricultural producers and touring the country. Students even toured Gundagai Lamb plant.

Shannon Walker, presenter from the Australian Butcher Team. Photo by Abby Vogl.

Here, too, students noticed cultural differences. Australia is planning to be carbon neutral by 2030, and Vogl comments, "It was really neat to see that all of these big meat companies were conscious of that. They were really concerned for the environment."

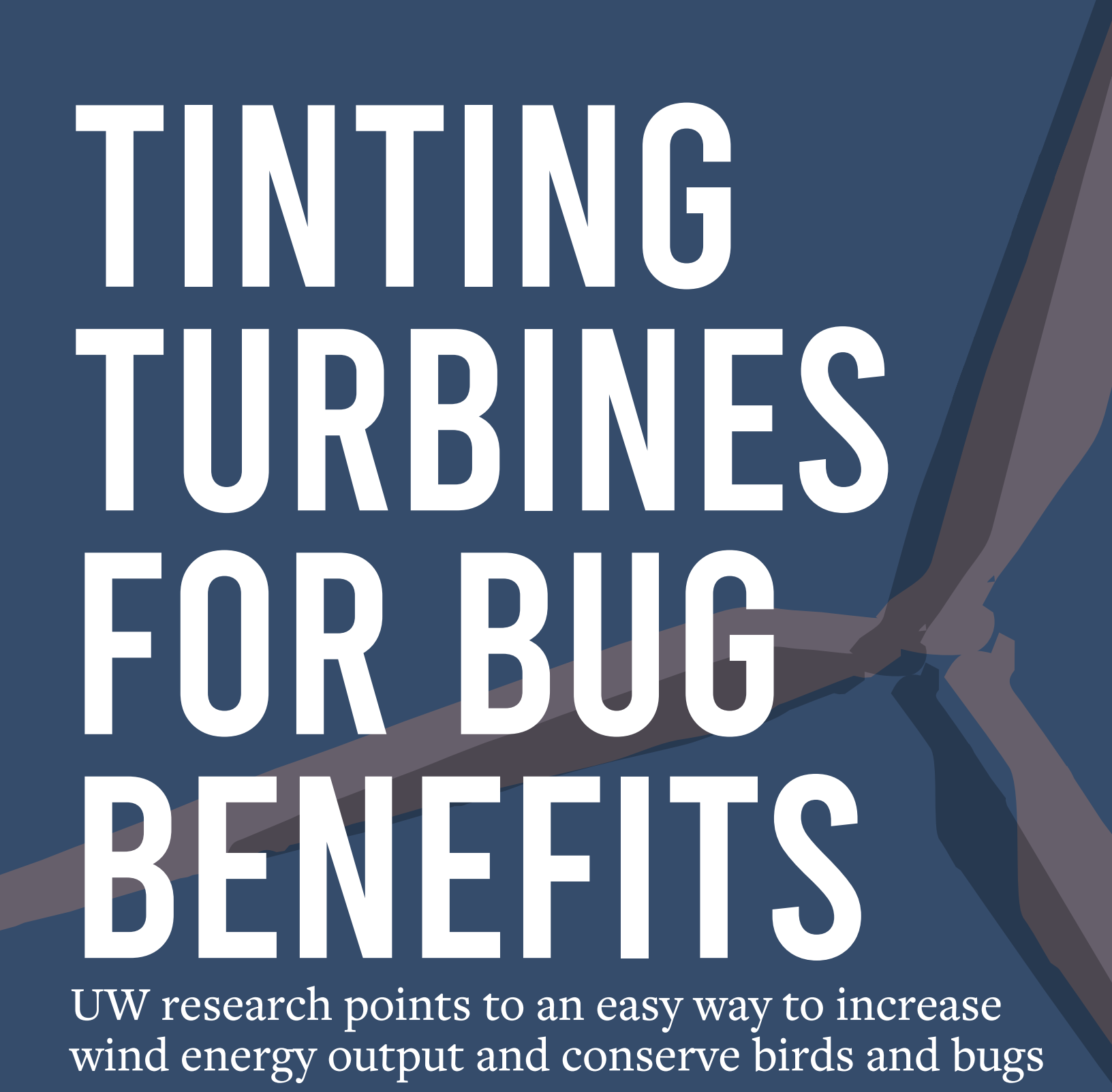
Phillips mentioned that after their experience in Australia, her team is hungry to get to know other U.S. meat judging students better. They planned to reach out to teams across the U.S. throughout the fall season.

Phillips is excited about the future of the UW meat judging team, and that seems to be the consensus. Reynolds summarizes, "We got to do so many things together, and I think everyone got something from this trip. We got out of our comfort zones. It was a once-in-a-lifetime experience."

To learn more about meat judging at UW, contact McKensie Phillips at mckensie.phillips@uwyo.edu or (307) 766-2334.

— Maya Gilmore
University of Wyoming Extension

TINTING TURBINES FOR BUG BENEFITS



UW research points to an easy way to increase wind energy output and conserve birds and bugs

Anyone who has driven around Wyoming has likely noticed large wind turbines dotting the prairie landscape. And while the large white rotor blades may catch a motorist's eye, they also could be attracting insects due to their light color.

To test the hypothesis that wind turbine color attracts insects, a group of University of Wyoming researchers, headed by former UW master's student Madison Crawford, sampled insects near experimental wind turbine mimics with nine different colors during summer 2017. The mimics were located on a hill with characteristics similar to sites of nearby wind energy facilities.

"Madison's study found that insects are attracted to colors with high reflectance generally. White reflects a high proportion of all wavelengths," says Lusha Tronstad, lead invertebrate zoologist with UW's Wyoming Natural Diversity Database (WYNDD).

Tronstad was last author of a paper titled "Insects are attracted to white wind turbine bases: evidence from turbine mimics" that was published this fall in *Western North American Naturalist*, a peer-reviewed journal focusing on biodiversity and

conservation of western North America.

According to the study, painting just the bottom portion of turbine bases a darker color may decrease the abundance of insects and their predators colliding with wind energy facilities. This would provide three benefits: More insects that perform ecological services may be conserved; fewer insect predators, including birds, may be attracted to wind turbines; and fewer insects may soil the surface of blades, which may lead to a substantial increase in wind turbine energy output.

"I hope a variety of folks read our study because I would like to see this hypothesis tested on a larger scale," Tronstad says. "Insects do not come to mind when people think of wind turbines, but they should. Insect debris on turbine blades can reduce the power produced by 50 percent when wind speeds exceed 26 mph. If we can reduce insects at wind facilities, more energy may be produced, and fewer birds may be around turbines. That is a potential positive result worth testing."

Crawford, who received her bachelor's and master's degrees in zoology and physiology at UW, was the paper's lead author. She performed fieldwork, analyzed data, and wrote the paper. Crawford, of Newcastle, is now a botanist with the U.S. Forest Service in Dillon, Montana.

Delina Dority, a UW master's student from Casper at the time of the study, and Michael Dillon, a UW professor of zoology and physiology, were other authors on the paper. Along with Tronstad, both mentored Crawford during the study. Dority had been investigating insects at wind facilities. Crawford was a UW undergraduate student at the time and wanted to work on her own project, Tronstad says.

Wind power is one of the fastest-growing forms of renewable energy, but interactions between wind turbines and insects are largely unknown beyond observations that the accumulation of dead insects on turbine blades drastically reduces the power the blades produce, the paper says.

Globally, most turbines are painted white so that the structures blend into the sky at ground level, can visibly be seen by aircraft, and provide protection from excessive heat, according to the paper.

Madison Crawford (left, holding stake), and Bryan Tronstad, an invertebrate taxonomist with UW's Wyoming Natural Diversity Database, install structures for Crawford's study. Photo courtesy of Lusha Tronstad.

Madison Crawford poses in front of a bee poster in Lusha Tronstad's office. Photo courtesy of Lusha Tronstad.

"Our results suggest that white, the predominant color of wind turbines globally, is one of the most attractive colors to insects," Crawford wrote in the paper. "We encourage others to investigate whether painting turbine bases a less attractive color—gray or green—may drastically reduce the attraction of insects to wind energy facilities."

During the study, which took place in the foothills of the Medicine Bow Mountains, insect abundance was highest next to the white, violet, and blue turbine mimics. Insect abundance was lowest adjacent to the turbine mimics that were green, orange, yellow, light gray, and dark gray.

"We suggest more studies because this study is the first of its kind. The wind turbine mimics we used were much smaller than commercial wind turbines," Tronstad explains. "Testing our hypothesis on residential or commercial wind turbines is a next step; however, county, state, and federal laws dictate the color of turbines...We predict painting turbine bases, perhaps only the bottom 10 or 20 yards, may have positive implications for insects and birds near wind facilities."

The Wyoming NASA Space Grant Consortium and the Wyoming Research Scholars Program at UW funded the research. These programs supported Crawford throughout her project and enabled her to gain excellent skills and conduct valuable research, Tronstad says.

— Ron Podell
Communications Specialist,
UW Institutional Communications

L-R: Sara Wood, Mindy Meuli, Megan McGuffey Skinner, Caitlin Youngquist, and Kali McCrackin Goodenough finish packing boxes of spelt flour for pickup by Food Bank of Wyoming in April. Photo by Kali McCrackin Goodenough.

New Collaboration Brings Whole Grains to the Wyoming Food Pantry System

It takes a whole community to help make healthy food available to neighbors facing food insecurity. Thanks to a donation of Wyoming-grown grains, a new partnership between Wyoming Heritage Grains, Food Bank of Wyoming, and the University of Wyoming Extension's Cent$ible Nutrition Program is doing just that.

"This partnership brings together food producers and processors, agricultural research, food security agencies, and nutrition education to address food insecurity through a collaborative approach," says Mindy Meuli, director of the Cent$ible Nutrition Program (CNP).

Many of these agencies and programs are considering how access to nutritious foods fits into food security. Increasing the availability of fruits, vegetables, low-fat dairy, and whole grains at anti-hunger organizations is a big part of this work.

"The donation of whole grains has a double benefit," Meuli explains. "Not only does it increase food access, it addresses nutrition security, which provides nutritious and healthy food options to people who are food insecure."

Innovative food production meets ag research

Sara Wood, owner of Wyoming Heritage Grains, grew Red Spring wheat




The milling to bagging process for the spelt flour at Wyoming Heritage Grains. Photos by Kali McCrackin Goodenough.

berries for this donation project and donated her time to mill spelt into flour. "I think it's really important for people to eat real, whole food and so I was all about this project," she says.

Wood is a producer based in Ralston, Wyoming. Her family homesteaded in the area and has been growing grains for 80 years.

"I wanted to help get the [spelt] flour out there, especially with the stone milling," Wood says. "More of the nutrition is left intact."

Stone milling keeps all parts of the grain in the flour, including the bran, germ, and endosperm. This increases the fiber and nutrient content of the flour, making it a more nutritious option. As an ancient grain, spelt is also higher in protein and some minerals than modern wheat varieties.

Wyoming Heritage Grains is the only commercial grain mill in Wyoming. "We started out with our small, 8-inch stone mill. I was just going to do this as a side part because our original business was malting," Wood comments. "In 2020, that kind of just stopped and so we focused on the flour."

Growing ancient grains is also a new addition to her family's business. "I started going down this road six or seven years ago," she explains. "I wanted to focus on different grains that people might not be aware of and try to figure out a way to process them locally as well. We're trying to keep it a Wyoming-grown, Wyoming-processed product."

As she began diversifying her crops, Wood reached out to former UW Extension educator Caitlin Youngquist for advice on growing einkorn. At the time, Youngquist was leading a project focused on growing ancient grains, including einkorn, in Wyoming.

"I think it's really important for people to eat real, whole food and so I was all about this project."

— Sara Wood

Owner of Wyoming Heritage Grains

Her goal was to identify alternative grain crops suitable for Wyoming growing conditions and to help develop consumer markets for those grains. Between 2018 and 2022, she worked with five Wyoming farms and three UW research and extension centers to grow einkorn, emmer, and spelt.

Soon, she and Wood were working together on education around ancient grains.

The food security, nutrition security connection

At the time, Youngquist also served as a regional director for First Lady Jennie Gordon's Wyoming Hunger Initiative. Through Youngquist's efforts, about 1,000 pounds of whole emmer (also known as farro) were shared with food pantries in Albany, Big Horn, Fremont, Laramie, and Washakie Counties.

Youngquist then reached out to CNP to see about donating larger quantities of the grains across Wyoming and providing recipes and educational materials to food pantry patrons. CNP connected with Food Bank of Wyoming to help with transportation and distribution of the grains.

"With our large presence and distribution capabilities, Food Bank of Wyoming has the ability to transport these grains to our community partners across the state who can ensure that this nutritious food is going to neighbors facing food insecurity," says Rachel Bailey, director of Food Bank of Wyoming. "We are thrilled to be able to support this partnership that includes the growers, processors, and the Cent$ible Nutrition Program, who can educate those in need on how to utilize these wonderfully nutritious offerings."

Starting in June 2023, the spelt flour and wheat berries were distributed to food pantry patrons across Wyoming. As part of the project, CNP worked with local food pantries to provide recipes and cooking demonstrations using these whole-grain foods.

To learn more about the project, contact CNP at cnp-info@uwyo.edu or (307) 766-5375.

— Kali McCrackin Goodenough
Cent$ible Nutrition Program Manager

UW College of Ag 2023 Outstanding Corporate Partner Award

Wyoming Wool Mill Recognized for Collaboration with UW Sheep Program

Ben Hostetler, operations manager at Mountain Meadow Wool, stands beside a knitting machine used to produce Wyoming Wool Initiative's custom blankets. Photo by David Keto.

Ben Hostetler didn't set out to become a leader in the wool industry. Mountain Meadow Wool, a regional mill and wool-processing facility in Buffalo, was his mother's dream.

While Hostetler may have gotten into the business by chance, the mill's success is no coincidence. In partnership with local wool producers, Hostetler has cultivated a thriving business.

He has also developed innovative collaborations with the University of Wyoming's sheep program and Wyoming Wool Initiative. "It's not hyperbole when we say that Mountain Meadow Wool is an unofficial satellite campus and laboratory in our educational and outreach efforts," says Lindsay Conley-Stewart, senior project coordinator for the UW College of Agriculture, Life Sciences and Natural Resources.

In recognition of the mill's contributions to research and outreach, Mountain Meadow Wool received the college's 2023 Outstanding Corporate Partner Award.

Engineering solutions

An engineer by training, Hostetler brings a unique approach to the wool-processing business. Both his technical expertise and problem-solving mindset have proved integral to developing new processes, products, and partnerships.

Even before he became operations manager, Hostetler found ways to support Mountain Meadow Wool, which opened in 2007. While completing his master's degree, he developed a wastewater management system and custom scouring line used to clean raw wool.

In addition to processing raw wool, Mountain Meadow produces yarn and an array of finished goods. "We're pretty unique globally in that you can see raw wool come in one side and finished product out the other side," Hostetler notes. "There's nothing at our scale that processes wool at this quality at our throughput and capacity."

Today, the mill sources wool from 10 local ranches and employs 26 Johnson County residents. In the six years that UW has partnered with Hostetler's team, the mill has hosted more than 200 undergraduate students, 130 sheep industry stakeholders, and multiple research projects.

A public-private partnership

In 2021, Mountain Meadow Wool became a production partner as well as an educational resource. As part of a pilot project, UW Extension Sheep Specialist Whit Stewart arranged for Mountain Meadow Wool to clean, process, dye, and spin the university's annual wool clip. Using a design Conley-Stewart created, Mountain Meadow Wool then used knitting machines to produce 300 blankets made 100 percent in Wyoming.

The blanket project soon blossomed into Wyoming Wool Initiative, a nonprofit partially supported by the UW College of Ag. "Both the mill and Wyoming Wool Initiative are passionate about teaching and outreach for the betterment of the Wyoming sheep industry," says Conley-Stewart. "One project will often spark an idea and lead to another project."

The limited-edition wool blankets, now produced annually, were integrated into traceability research led by former graduate

These colorful skeins are 100 percent made in Wyoming. Photo by David Keto.

"We worked together to build a realistic traceability framework for U.S. wool, the first of its kind in the U.S."

— Courtney Newman
Former UW Graduate Student

student Courtney Newman. Now an industrial engineer at Tyson, Newman credits Mountain Meadow Wool with much of her practical experience in the wool industry.

"I have treasured all the time I have spent with Ben and Mountain Meadow Wool," Newman comments. "They have always been so willing to share their knowledge and help with anything UW has needed over the years. They are a wonderful friend and partner of UW and Wyoming's sheep industry."

Supporting students and stakeholders

In 2022, Newman used blockchain technology to document blanket production from sheep to finished product. It wouldn't have been possible without Mountain Meadow Wool, she says.

Blockchain is a digitized database that is shared and modified cryptographically, with the goal of improving product traceability and transparency. Mountain Meadow Wool, which integrates the concept of traceability into its daily operations, provided an ideal "sandbox" for testing the concept in the wool industry.

"Ben and his team provided us with the resources to be able to trial traceability," Newman explains. "We worked together to build a realistic traceability framework for U.S. wool, the first of its kind in the U.S."

For Hostetler, it was an opportunity to support university research valuable to the industry. While traceability is built into Mountain Meadow's business model by design, he recognized the project could benefit the industry more broadly.

"What is so unique about Mountain Meadow Wool and UW's partnership is the grassroots commitment to developing people, Johnson County's economy, and sheep producers across the nation," says Conley-Stewart. "The collaborative synergies with Mountain Meadow Wool are a remarkable template for enhancing UW's land-grant mission and we foresee many more years of working with Ben and Mountain Meadow Wool."

— Brooke Ortel
University of Wyoming Extension

UW College of Ag 2023 Legacy Award

LAURA BUCHOLZ

Generous Donor Helps Irrigation Research and Administration Flow Smoothly

Wyoming rancher, veterinarian, and legislator Kurt Bucholz believed in allocating irrigation water according to statutes, not squabbles. Today, his neighbors in the Brush Creek watershed work with irrigation administrators from the University of Wyoming to do exactly that.

But it wasn't always that way. Located in the North Platte River Valley, Brush Creek is the sixth largest irrigation district in Wyoming. It's also known as one of the state's most complex and conflict-ridden irrigation systems.

Bucholz's efforts to better understand the more than 200 water rights associated with the drainage—and make that information available to his fellow ranchers—paved the way for a more constructive approach to water management. Over the past decade, his neighbors have worked with UW scientists to establish a new administrative structure based on data rather than arguments.

"This is how I think Kurt would've liked to see it happen. We based it on that, being able to work together and manage things properly," says his wife, Laura Bucholz.

While her husband passed away in 2006, she has carried on his legacy through her involvement with the Brush Creek project and generous support of UW's water management research. In

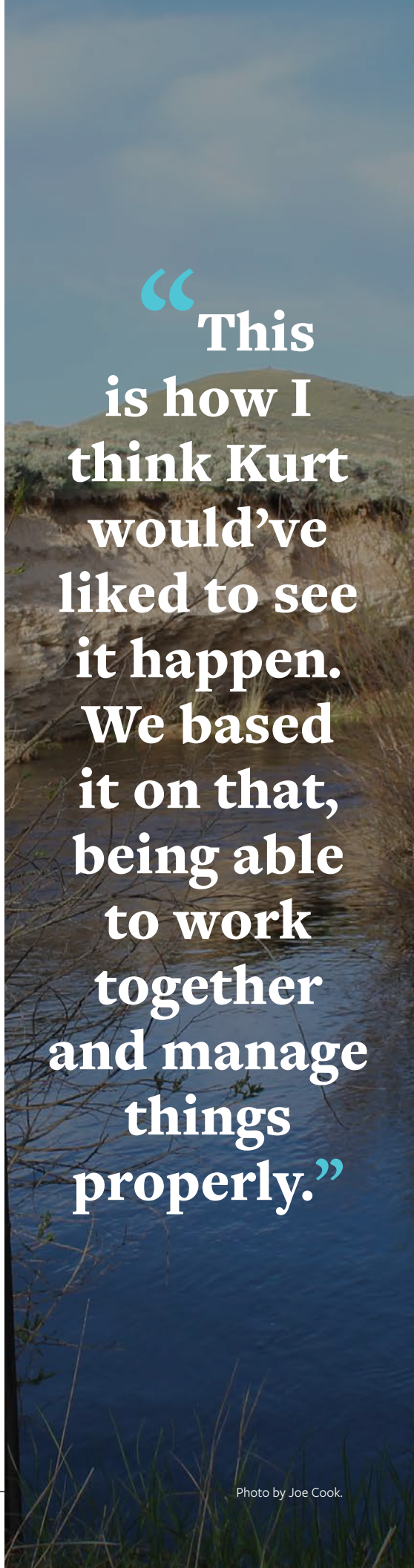


Photo by Joe Cook.

recognition of her contributions, she received the UW College of Ag's 2023 Legacy Award.

Water wars

In 2002, Kurt Bucholz commissioned former Wyoming legislator Jeb Steward to research water rights in the Brush Creek drainage.

Steward created a booklet that irrigators could use to calculate water priorities according to state law. It was the first step in a long journey toward an innovative, science-based model developed by UW researchers.

"Laura's husband was the backer of the initial stages of research on irrigation in the Brush Creek drainage," says Joe Cook, irrigation administrator and UW research scientist. "If he hadn't done that, there wouldn't have been stepping stones to launch the project. That morphed into Laura being a staunch supporter of collaboration and keeping the group [of Brush Creek irrigators] together."

Keeping the group together was not an easy task. For years, ranchers in the Brush Creek drainage could agree on only one thing: They needed help mitigating the constant conflict over water rights.

"Before the program that we have going on now, we spent more time fighting with each other and threatening lawsuits and arguing than we did actually irrigating," recalls rancher Michael Condict, who serves as ranching group coordinator for the Brush Creek – French Creek irrigation system.

In 2013, the conflict escalated beyond the state engineer's office to the governor's office. Finally, UW scientists were enlisted to assist with irrigation administration.

Flumes equipped with telemetry devices (in background) allow for low upkeep, real-time flow monitoring. Photo by Joe Cook.

From conflict to cooperation

Building on Steward's research, the UW researchers compiled baseline flow data and created a model to calculate water priorities. With the help of rancher Reggie Thornborg and other irrigators, the scientists translated this data into physical adjustments throughout the system.

Today, the calculations are semi-automated and the 15 ranches participating in the program have access to real-time data. During irrigation season, UW administrators monitor and adjust flow multiple times a day. "It's never going to be perfect," says Cook, "But we can make it as good as possible."

This summer, a large ditch blew out in the Brush Creek drainage. In the past, ranchers whose water rights weren't affected would've stayed home.

But that's not the case anymore. "Everyone, whether they had a water right or not, came together and got it back online, saving time and money and creating a lot of goodwill," says Laura Bucholz. "I think everyone feels good enough about how things work that it will carry on, hopefully for the next generation."

Irrigation administrator Joe Cook records an adjustment made to a headgate. Photo by Brooke Ortel.

Supporting irrigation excellence

Recognizing UW's role in mitigating decades of conflict, Bucholz recently made a generous donation to the university's hydrology program. As president of the Gretchen Swanson Family Foundation, she has chosen to support irrigation research and administration in her husband's honor.

The Swanson Foundation's gift, much of which was matched by the state, established the Dr. Kurt S. Bucholz Irrigation Science Excellence Fund. The fund supports water management research in the UW Department of Ecosystem Science and Management. Specifically, it supports a directorship or graduate student engaged in water rights management or hydrological research.

The gift also created the Watershed Hydrology Graduate Assistantship, which provides funding to a graduate student serving as irrigation administrator in the Brush Creek system.

"The new funding creates a permanent place for multidisciplinary agricultural research around irrigation," Cook explains. "This funding will also support exciting research projects on ranches that are willing to allow it."

— Brooke Ortel
University of Wyoming Extension

American Hereford Association Hall of Fame, 2014.

ROGER STUBER

Six Decades of Success

Sixty-one years after his graduation from the University of Wyoming, Roger Stuber received the UW College of Agriculture, Life Sciences and Natural Resources Outstanding Alumni Award for his contributions to the cattle industry.

All through elementary and high school, Roger Stuber wanted to be a lawyer. In fact, that's what brought him to the University of Wyoming in the first place. Stuber grew up in Bowman, North Dakota, on the ranch his grandfather established in 1909. He chose UW because it offered the only program where he could get an animal science degree and start in the college of law without first completing a Bachelor of Science.

Stuber graduated UW in 1962 with a degree in animal science and an emphasis in business administration (just a few classes short of a double major). He was the first member of his family to graduate college. He averaged nearly 20 credit hours a semester and was the valedictorian of his class.

After the graduation ceremony, Stuber's father asked to ride back to North Dakota with him. About 20 miles north of Laramie, his father asked, "What would it take to get you to come back to the ranch?"

"You'd have to buy me 40 registered Hereford heifers," replied Stuber. His father agreed without hesitating.

Stuber returned to work on the Stuber Hereford Ranch, and in 1969, he helped put together the ranch's first bull sale. In 1972, he and his brother Dick purchased the ranch from their father.

"I never studied so hard—but it did shut them up."

The power of electives

The truth is, it wasn't hard to convince Stuber to come home. Law, he'd found out, did not allow much for innovation, and going over the same cases time and time again bored him. He was more excited about what he'd learned in an animal genetics course that year.

The class wasn't part of his animal science curriculum. He signed up after a challenge from other members of the ATO fraternity. They had teased that it was easy to get good grades in the College of Agriculture. "I asked my advisor to let me take this zoology class with those guys," says Stuber. "I never studied so hard—but it did shut them up."

Stuber suggests current students should take the courses they're interested in, even if those courses aren't exactly standard practice for their major. His advisor, Paul Stratton, often questioned the classes he wanted to take, but Stuber says, "I wouldn't have the success I've had today without that education." From balancing a checkbook to understanding cutting edge genetic research, Stuber's elective courses have served him well over the years.

Stuber also expresses gratitude for other aspects of his education. "Looking back, there wasn't a professor in my animal science program that I don't have the utmost respect for," he says.

Genetic excellence

With characteristic understatement, when asked about his accomplishments, Stuber admits his cattle have been "pretty well received."

Stuber Hereford Ranch (SHR) cattle have been sold throughout the U.S. and have even been exported to countries as far away as Argentina and Kazakhstan.

Within the U.S., SHR has raised and owned bulls that have been at the top of almost every expected progeny difference (EPD) category at the American Hereford Association.

SHR bulls have also won the National Western Stock Show twice. This competition is based on phenotype, genetics, and aesthetic appeal. In 1986, SHR produced Grand Champion SR Verdict 455, and in 2020 they won again with SR Dominate 308F ET.

SHR held its 55th annual bull sale in April 2023. Much of the ranch's success as a genetic leader in breeding Hereford cattle can be attributed to Stuber's leadership.

Stuber Hereford cattle. Photo courtesy of Roger Stuber.

Legislative accomplishments

In addition to leading his own business, Stuber has also been involved with state, national, and international legislation in the cattle industry throughout his career.

In 1985, the Beef Checkoff program passed as part of the 1985 Farm Bill. Under the Beef Checkoff program, which still exists today, producers and beef importers pay a dollar to assess each animal they market or import. Half of these funds go to the national program, and half stay in the state.

At the time, Stuber was vice president of the National Cattlemen's Association. After the Beef Checkoff passed, four national industry organizations put together a meeting in Chicago to allocate the money. Three hours into the meeting, nothing had been resolved. The organizations couldn't agree on what to fund.

At the end of another inconclusive meeting with NCA president-elect Jimmie Wilson, Stuber suggested that they write a proposal for a long-term plan for the U.S. beef industry. Rather than fighting amongst themselves, they could focus on what the industry needed, with input from customers up to producers.

This long-term plan didn't just help the national cattle industry. It also standardized taste and helped keep stringy steaks out of the grocery store aisle. "If I've had any success in these national boards, it's because I've taken classes in commerce," reflects Stuber. "It's always rewarding to think you've contributed something to your industry."

International agreements

Stuber's contributions didn't stop at national legislation. In 1993, as president of the National Cattlemen's Association, he participated in the General Agreement on Tariffs and Trade (GATT) in Geneva, Switzerland. Cattlemen had a lot to gain if the agreement was passed, including better access to global markets and higher profits due to reduced tariffs.

Near the end of the session, former Secretary of Agriculture Mike Espy gathered cattlemen from several different organizations into a room. He told them that President Clinton and the Australian prime minister had decided to remove the quota on imports of New Zealand and Australian beef.

As other cattlemen started to debate with Espy, he came over to Stuber and asked his position. Stuber had to think fast. It was 2:30 a.m. in Washington, D.C., and he had no one to consult with. He said, "My organization speaks for the cattle industry. We will go along with you getting rid of the quota, but the reduction in tariffs must stay in place and the in-quota tariff of 3% must stay."

Espy agreed. A few hours later, he was flying back to Washington D.C. The principles of the GATT would later become the backbone of the World Trade Organization.

Six decades of distinction

Stuber has met four different presidents, served on the boards of several prestigious national and state organizations, and won a multitude of awards over the course of his career. He was inducted into the American Hereford Association Hall of Fame (2014), named Agriculturalist of the Year in 1980 by the NDSU Saddle & Sirloin Club, and received the BEEF Magazine Trailblazer Award in 1993.

Sixty-one years after graduation, Stuber's unique contributions to the U.S. cattle industry demonstrate just what you can do with a UW education. He continues to own and operate Stuber Hereford Ranch along with members of his brother's family. He's still running the ranch, still playing a leadership role in his community, still proving that he can adapt to just about any challenge.

— Maya Gilmore
University of Wyoming Extension

Karen Williams. Photo courtesy of Steve Williams.

Remembering UW Alumna Karen Williams: Educator, Innovator, and Mother

As an educator and parent, UW professor emerita Karen Cachevki Williams noticed things that other people didn't. She was especially fascinated by the unique ways that children learn and process their surroundings.

Williams' life's work centered on the education of young children, and the education of those who teach young children. Her enthusiasm for teaching extended from the youngest students at early childhood education centers to adults enrolled in distance learning programs.

She delighted in interacting with children, mentoring university students and faculty, and cooking for a crowd.

Educational excellence

A first-generation college graduate, Williams earned a B.A. in English/secondary education at the University of Illinois and began her career as a high school teacher in North Carolina. In 1976, she and her husband, Steve Williams, moved to Laramie, Wyoming. While he settled into a faculty position in the UW Department of Ecosystem Science and Management, she earned a B.S. in home economics/consumer and educational services.

She went on to complete a master's degree in human development from Pacific Oaks College and a Ph.D. in curriculum and instruction from UW, specializing in early childhood education.

As a faculty member in the UW Department of Family and Consumer Sciences, Williams worked with children and adult learners near and far. She traveled to early childhood education centers on the Wind River Indian Reservation, an international school in Germany, and a U.S. Air Force base in New Mexico.

Williams' lengthy career at UW included a seven-year stint as head of the family and consumer sciences department. She also served as director of the applied science program and as a university assessment specialist in the Office of Academic Affairs.

In recognition of her contributions to the university and state, Williams was posthumously awarded the 2023 UW College of Agriculture, Life Sciences and Natural Resources Outstanding Alumni award.

An early champion of distance learning

In 2001, Williams established UW's distance professional child development bachelor's degree program. Working across departments and colleges, she led the development of

a comprehensive, interdisciplinary program that met national standards for early childhood care and education.

The degree requires coursework in understanding and respecting cultural diversity, working with families, supporting children with special needs, and addressing behavioral issues, says Margaret Cooney, UW professor emerita and a dear friend of Williams.

"One of the gaps in all our early childhood degree programs was that of diversity and its impact on teaching and learning for young children," Cooney writes. "These were difficult concepts for professionals to absorb and Karen's ability to teach both colleagues and students in a way that leads to conceptual understanding was remarkable."

Williams' ability to communicate these concepts traced back to her childhood in Chicago, where she was raised in a family of recent immigrants. While her parents had no formal education beyond high school, they nurtured an environment in which diverse personalities, backgrounds, and religions were welcomed and respected.

Karen Williams. Photo by UW Extension.

Throughout her career, Williams advocated for place-bound learners and non-traditional students. In 2010, she launched UW's bachelor's of applied science (BAS) in organizational leadership program, a distance learning program originally housed in the College of Ag.

As director of the BAS program, Williams worked tirelessly with community colleges across the state to ensure working adults received a quality education that met their needs. According to a colleague, it was the first program of its type in the nation.

Founding the UW Early Care and Education Center (ECEC)

Williams also served students closer to home. On the behalf of Laramie's youngest students and their families, Williams spearheaded the creation of UW's Early Care and Education Center. Among her many accomplishments, this was one of her most cherished.

"Karen was the lead advocate and designer for the new building," says Cooney. "I see her dedication to children and families as all inclusive: as a teacher of young children and later UW students, as a curriculum designer of exciting content...as an advocate for diversity, as a visionary of learning spaces."

The ECEC opened in 2005 after years of meticulous planning and fundraising. "Karen wound up visiting all over the state, talking to legislators and deans, pulling together a multimillion-dollar project to build the ECEC," her husband recalls. "It was one of the things she was really proud of."

When the project fell behind schedule, the couple personally purchased many of the classroom items and furniture required to open the facility. More than 15 years later, the ECEC continues to thrive.

A mentor and cheerleader

The ECEC offers a physical reminder of Williams' contributions to the UW community, but the lasting impacts of her wise and thoughtful leadership extend well beyond Laramie.

"It was Karen who recognized my potential, when I didn't see it in myself, to be in an administrative leadership position," comments Bruce Cameron, professor and department head of textiles, apparel design and merchandising at Louisiana State University.

Cameron isn't the only mentee who considers Williams a key player in his success. She mentored dozens of students and colleagues over the years.

"She inspired other people. I think she was like a cheerleader in some ways," her husband reflects. "She could show people the good things that they were doing and put those into a context where they'd pay attention to it."

Unlike some of her peers, Williams loved advising. She unhesitatingly agreed to mentor any undergraduate or graduate student who needed an advisor.

Williams and her son Eric at her UW retirement reception. Photo by Steve Miller.

"Her leadership instilled a unique confidence within her mentees, and a love of teaching," writes a group of UW colleagues and mentees. "Dr. Williams was able to find a way only she could, to help her students love teaching and see the good in the world."

Engaging with people and places

Williams' enthusiasm for interactive, workshop-style learning influenced classrooms around the world—including her husband's. She helped him become more aware of the human and cultural aspects of teaching. "I began to realize there was the quantitative side, qualitative, and a zone in the middle that was more witchcraft," he says.

Stan Bellgard (left) and Karen Williams. Photo courtesy of Steve Williams.

The magic often took place outdoors. "She felt as though education, whether it's at an early age or later on, focusing on the outdoors is so important," her husband recalls. "There's so much to be learned from being outside, even on a cold day."

As a couple, they brought this thoughtful, holistic approach home, perfecting the art of tag-team parenting. Together, they juggled busy academic schedules and research trips abroad with bedtime stories, holiday celebrations, and outdoor adventures with their two sons.

Many of these expeditions were accompanied by fishing poles. Although she spent most of her life in landlocked states, Williams loved fishing and especially enjoyed the ocean.

She was just as at home in the kitchen as she was outdoors. "She was a great cook, and she could cook by the seat of her pants," says her husband. Like her mother, Williams often measured in handfuls, generously tossing in ingredients as she bustled around the kitchen.

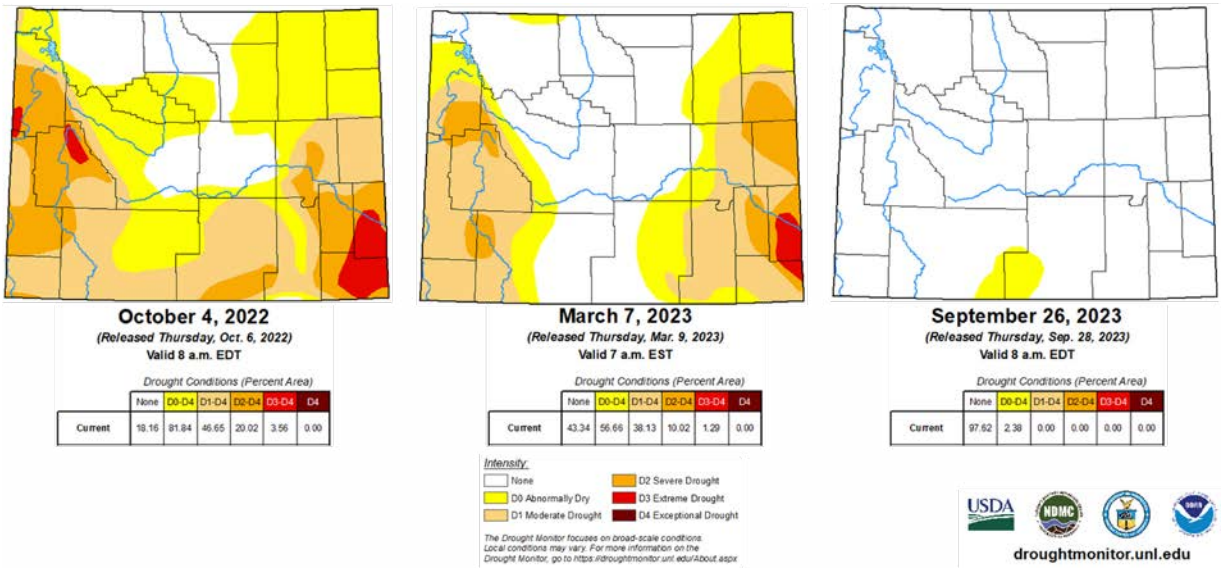
In many ways, she lived the way she cooked: with joy, creativity, and a tendency to give in handfuls rather than teaspoons.

Karen Cachevki Williams passed away in April 2023. Her legacy lives on in the memories of her family, students, colleagues, and friends—and in the educational opportunities she created for past, present, and future students.

— Brooke Ortel
University of Wyoming Extension

Monthly Webinars Provide Updates on Drought Status

Join Wyoming's weather wizards for briefings on current and forecasted conditions



U.S. Drought Monitor (USDM) maps showing drought conditions at the beginning, middle, and end of water year 2023, which began October 1, 2022, and concluded September 30, 2023. Drought conditions change continually, and readers are encouraged to seek out the most recent information from USDM at droughtmonitor.unl.edu.

For those interested in current and forecasted drought status, weather trends, and precipitation levels, the Wyoming Conditions and Monitoring Team (WCMT) facilitates monthly webinars open to the public.

Founded in response to an ongoing drought that emerged in 2020, the WCMT brings together state, federal, university, and tribal partners to monitor and report drought-related information to Wyoming residents and the U.S. Drought Monitor.

The Wyoming Conditions & Outlooks webinar series is organized by the University of Wyoming Extension in collaboration with the USDA, NOAA's National Weather Service, U.S. Geological Survey, Wyoming State Climate Office, Water Resources Data System at UW, and Wyoming State Engineer's Office.

The monthly briefings address local and statewide precipitation, average temperatures, stream flow, reservoir levels, soil moisture, and more. In addition to reporting current conditions, experts compare data to historical trends and relay forecasts for the coming weeks and months.

"We start with current conditions to help the audience understand why the U.S. Drought Monitor looks the way it does and then transition into discussing outlooks," explains Windy Kelley, UW Extension weather variability and agricultural resiliency specialist.

The webinars also address seasonally relevant topics, such as winter outlooks, snow water equivalent, and ice jam potential.

"We try to provide relevant, timely information so that people can be more prepared to take action if needed, and make more informed decisions," says Kelley, who also serves as the regional extension program coordinator for the USDA Northern Plains Climate Hub.

In each webinar, experts highlight a new resource, program, or online tool related to drought and weather conditions. Examples include Grass-Cast, a tool that forecasts forage production, and the National Weather Service's IDSSA Forecast Points page, which provides hourly, location-specific weather forecasts.

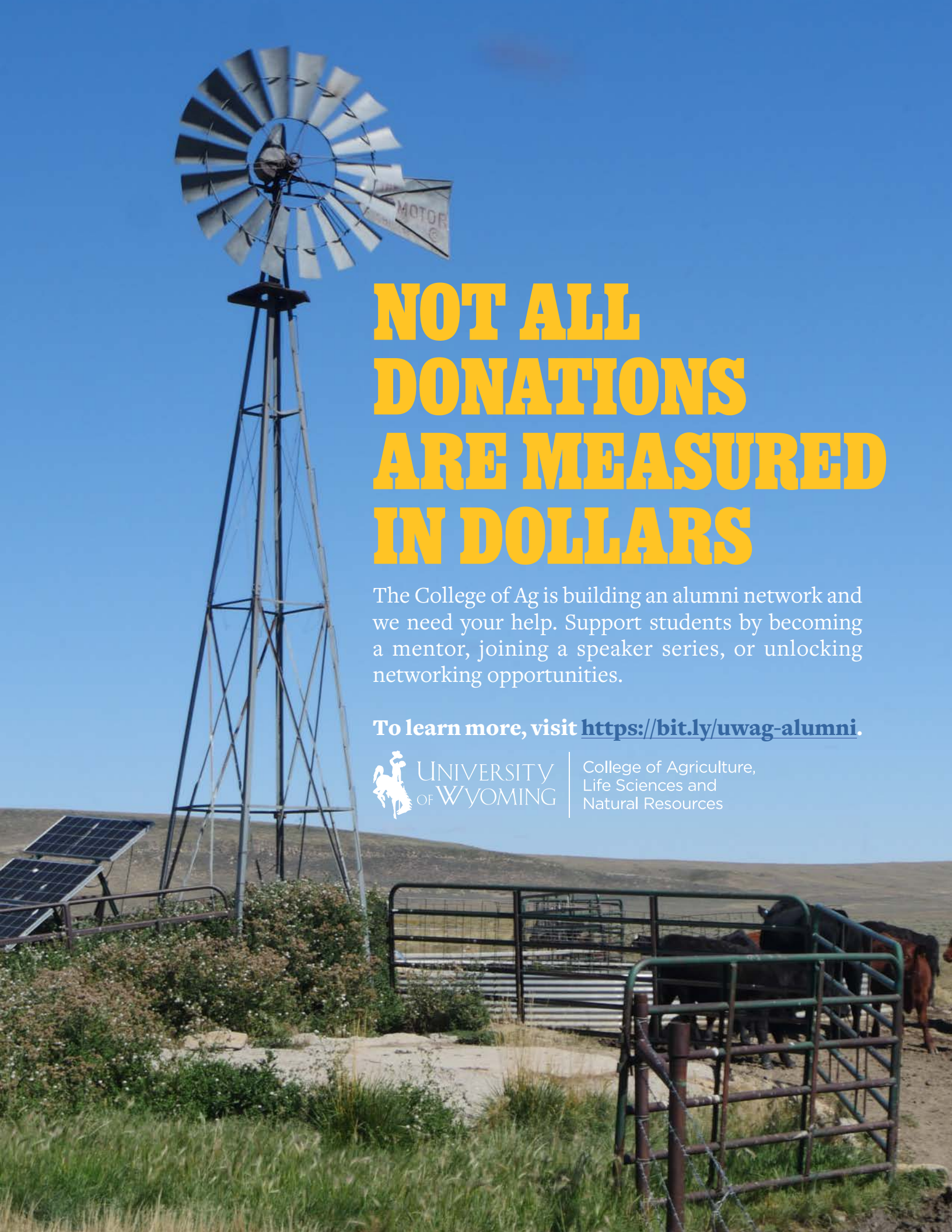
Webinars typically occur on the third Thursday of each month from 1–2 p.m. To join the monthly WCMT webinar invite list or submit questions, contact Kelley at wkelley1@uwyo.edu.

To view webinar recordings and downloadable copies of the presentations, visit drought.wyo.gov. Recordings can also be found on UW Extension's YouTube channel.

— Brooke Ortel
University of Wyoming Extension

Recommended Resources from the National Weather Service

- IDSSA Forecast Points: weather.gov/forecastpoints
- Probabilistic Snow Forecast: weather.gov/cys/winter
- Wyoming Weather Decision Support: https://bit.ly/nws-wydss



NOT ALL DONATIONS ARE MEASURED IN DOLLARS

The College of Ag is building an alumni network and we need your help. Support students by becoming a mentor, joining a speaker series, or unlocking networking opportunities.

To learn more, visit https://bit.ly/uwag-alumni.

UNIVERSITY OF WYOMING

College of Agriculture, Life Sciences and Natural Resources

UNIVERSITY OF WYOMING

College of Agriculture, Life Sciences and Natural Resources
Department 3354
1000 E. University Ave.
Laramie, WY 82071

Please accept my/our gift to the University of Wyoming in the amount of:

☐ $125 ☐ $250 ☐ $500 ☐ $1,000 ☐ $2,500 ☐ Other

This gift is designated for:

☐ College of Agriculture, Life Sciences and Natural Resources

☐ AES ☐ LREC (Laramie) ☐ PREC (Powell) ☐ Student Professional Development & Travel
☐ SAREC (Lingle) ☐ ShREC (Sheridan) ☐ Student Scholarships

☐ College of Ag Dean's Fund

☐ International Study Opportunities ☐ Department of (please specify)

☐ Other (please specify)

Online: Make a payment online using our secure service: www.uwyo.edu/giveonline

Phone: Call the University of Wyoming Foundation during normal business hours:
(307) 766-6300 or (888) 831-7795.

Mail: Send a payment by mail to UW Foundation.

☐ Please send me information about planned giving (wills, trusts, etc.).

☐ Yes, UW is named in my will.

☐ My company matches my gifts. I have included a form from my company.

My preferred email address:

My preferred phone number:

UNIVERSITY OF WYOMING
Foundation

1200 East Ivinson Street
Laramie, Wyoming 82070
(307) 766-6300
(888) 831-7795
N11GA

Thank you!

Your gift is tax deductible as provided by law.