

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

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College of Agriculture
and Natural Resources

**Inside: COVID-19 responses,
gardens for children, horn fly
and tardigrade research, and
more**

**2020 Annual
Volume 29**

Editors

Steven Miller
University of Wyoming Extension

Katie Shockley
University of Wyoming Extension

Graphic Designer

Tanya Engel
University of Wyoming Extension

Contributors

Kali McCrackin Goodenough
University of Wyoming Extension
Cent\$ible Nutrition Program

David Keto
University of Wyoming Extension

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Direct magazine and website inquiries to:

cespubs@uwyo.edu

On the cover:

Kris Potter, a teacher at the Montessori School of Cheyenne, helps a young student plant in one of their new garden beds.

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College strengthening resources to fulfill ‘Growing People, Knowledge, and Communities’ mission

We are all looking forward to welcoming students back to campus and to in-person classes after shifting to online delivery last spring. Place is a lot less lively when students are not around.

Our college’s emphasis is Growing People, Knowledge, and Communities. This fall brings a number of new faculty members. **Anders Van Sandt** joins the Department of Agricultural and Applied Economics as an assistant professor in regional economics with a focus on community economic development. He will also be working with UW Extension programs. UW alumnae **Kassandra Willingham** returns to Laramie as an assistant lecturer in molecular biology teaching general microbiology and medical microbiology classes.

The animal science department welcomed assistant professor **Jeremy Block**. His area of expertise is reproductive physiology. Animal science is also in the final stages of hiring a new beef extension specialist and hopes to have this position finalized soon. The new beef specialist will replace **Steve Paisley**, who was named director of the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle.

In August, **Donna Harris** joined the plant sciences department at our Sheridan Research and Extension Center.

She will hold the Whitney Benefits Endowed Professorship in Agriculture. Assistant Professor Harris will offer classes in plant sciences to UW students and work with both UW and Sheridan College students pursuing an active research program in plant genetics.

New faces in the veterinary sciences department are **Elizabeth Case** and **Jacqueline Kurz**. Assistant Professor Case will direct the UW Biocontainment Facility and Assistant Professor Kurz will join the pathology faculty at the Wyoming State Veterinary Diagnostic Laboratory.

Major gifts this past year will also boost various programs within the college and support Wyoming agriculture. **Farm Credit Services of America, Jim and Christy Neiman/Neiman Enterprises**, and **Kent and Susan Westedt** have made substantial commitments to our students and to college strategic initiatives.

Farm Credit Services of America (FCSA) has generously supported scholarships and leadership initiatives in the College of Agriculture and Natural Resources for many years. In May, FCSA made a \$1.5 million commitment to the college to enhance programming in ranch management and agricultural leadership. This gift will be matched dollar-for-dollar through the matching gift program created by the Wyoming Legislature



Dean Barbara Rasco

during its 2020 session. This gift will form the backbone for a new Ranch Management and Agriculture Leadership Program with a goal of providing students with the technical knowledge, business acumen, and leadership skills needed to manage agricultural operations in an increasingly complex world. This program will provide real-world experiential learning opportunities in the private, public, and nonprofit sectors associated with Western agriculture.

Neiman Enterprises is a major regional forestry products company based in Hulett, Wyoming. This year the Neiman family created the Neiman Family Forestry Resources and Range Professorship. This new faculty position will focus on forest management in the Rocky Mountain West and deepen the college’s forestry management expertise.

Kent and Susan Westedt have also created a new endowment that will provide hands-on livestock management experience for our students and benefit the UW Rodeo Program. Each year the UW Rodeo program purchases

Uncertain circumstances prompt exceptional support response by extension personnel

Greetings from all of us at University of Wyoming Extension and your College of Agriculture and Natural Resources.

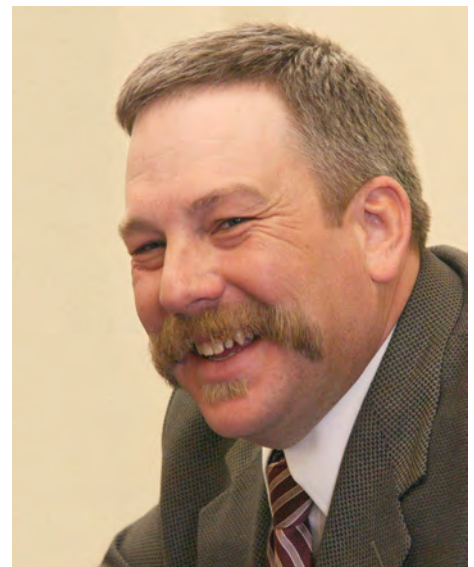
I genuinely hope you enjoy this edition of Ag News. This publication aims to provide a glimpse of some of the noteworthy projects happening in the college. Admittedly, I hope this introduction leads you to further engagement with the UW College of Agriculture and Natural Resources through your local UW Extension offices.

The last several months have been filled with uncertain, unfamiliar, and uncomfortable circumstances for UW Extension personnel and the Wyoming communities we serve. These are certainly not the conditions I anticipated in my first year as extension director, and these challenges are not usually associated with a thriving and dynamic organization. Yet, that is exactly how UW Extension responded to COVID-19.

In offices throughout Wyoming and on the Wind River Indian Reservation, UW Extension personnel met the challenges and continued to thrive through community service. UW Extension continued to provide critical community support and educational experiences in the presence of unprecedented change and uncertainty. Our extension educators, specialists, extension volunteers, community members, and county partners found a way to serve in spite of closed schools, social distancing, face coverings, travel restrictions, quarantines, and personal health concerns.

It is humbling to think UW Extension may contribute to the profound spirit, strength, and resilience demonstrated by Wyoming communities during the COVID-19 crisis.

I am exceedingly proud of the commitment, innovation, and personal sacrifice demonstrated by my colleagues



Extension director Kelly Crane

during the past months. Likewise, I am proud of Wyoming and the character we exhibit in the face of challenges.

UW Extension remains committed to serving the communities of Wyoming. This commitment is realized through the outstanding support we enjoy from the College of Agriculture and Natural Resources, the University of Wyoming, and every county government in the state. Statewide engagement is our sole mission, and we can only succeed through positive and productive relationships with all of you. Please let me know how we can serve you better.

Best wishes for a healthy, peaceful, and profitable year.

— Kelly Crane

Rasco, continued page 1

calves for practice that are owned, fed, and managed by the UW rodeo team. Ideally, calves are managed in a way that promotes calf growth because calves will be sold when the rodeo team is finished using them; however, these calves are also managed for use at practices. This can impact growth and performance.

The objective of a new animal science course is to determine best management practices that optimize calf growth and utility. This program will be incorporated into the ranch management program and supported, in part, by the Westedt's gift.

Despite these uncertain times, the college is moving forward to meet the educational goals of students, conduct

research to help meet the global needs for agricultural products, and enhance Wyoming through our outreach programs. We are *Growing People, Knowledge, and Communities*.

— Barbara Rasco

UW students overcome internet, cell reception obstacles to participate in courses



Kelly Woodruff and calf with a concerned mother. Woodruff is conducting research data at the Laramie Research and Extension Center beef unit. Photo by Jordan Williams

An academic landscape routed by coronavirus had agriculture students at the University of Wyoming in the spring adopting a Marine-like improvise, adapt and overcome attitude.

Undergraduate student Ty Paisley north of Wheatland listened to courses via podcast through Bluetooth in a tractor while working because COVID-19 doesn't stop winter turning to spring and pastures needing harrowing.

Livestock judging team member Courtney Newman outside Fort Collins and other team members were honing skills via online livestock judging contests because all live contests were cancelled.

Animal and veterinary sciences freshman Kiley Stevens in Juneau, Alaska, took advantage of group chats to keep up with her assignments.

Graduate student Kelly Woodruff obtained a research exemption to conduct research near Laramie so every two hours she checked cows ready to calve for research data, because cows ready to calve didn't know UW put in place research restrictions due to coronavirus safety concerns.

They're only a few examples of how College of Agriculture and Natural Resources students handled the changes when COVID-19 whacked their academic landscapes.

UW required most classes and laboratories be offered online, live or recorded.

Woodruff's research subjects are at the beef unit of the Laramie Research and Extension Center. She suctions stomach fluid from newborn calves before they nurse, studying the effects of cow nutrient restriction on the developing calf biome. The cocktail is rich with bacteria, fungi, protozoa and viruses. Woodruff's adviser, Hannah Hollinger in the Department of Animal Science, is interested in the development of the calf microbiome and whether the microbiome is different in a nutrient-restricted cow and how the restricted nutrient diet affects development of the calf.

Woodruff said she is thankful for the ability to continue her research. "Cows only calve once a year, and I can't pick this up in a couple of months," she said. "We are maintaining all social distancing guidelines."

Calving was the end of March and through early May.

Paisley had to work around very limited internet and cell service. He said he and his high school siblings used a hotspot with their phones to complete coursework.

"I tried to tune into classes when I can," said Paisley, majoring in animal science with a business concentration and a minor in ag business. "With nice spring days, I can't wait on classes. I also work quite a bit on studies at night."

The entire Paisley family wrestled the changes wrought by COVID-19. Steve Paisley, an associate professor and the UW Extension beef specialist, teaches classes in animal science. He noted he had one student drive to a McDonald's parking lot for internet to participate in his class.

Ty Paisley has the Zoom app on his phone and had installed a stereo in a tractor years ago. He listened to lectures and watched Zoom presentations while working.

"I'm trying to get harrowing done, and everything is dry right now, the right time to do it," he said, prior to recent snowstorms that had blanketed Wyoming. "I've got everything linked

through. I've listened to a couple lectures and in the morning when I'm feeding I can listen to them, too."

The Paisleys were also in the middle of calving, and he checked cows during the day and a couple times at night so his father, director of the James C. Hageman Sustainable Agriculture Research Extension Center near Lingle, could get some sleep before he had to go to work, a 45-minute drive.

Stevens in Alaska's capital city said she wrote down all due dates of assignments in a planner to stay on top of her classes.

She has good internet and cell service. Juneau is two hours behind Mountain Time.

"I also (did) my best to watch the lecture videos for all of my classes on the day I normally would if I were attending class," Stevens said. "This way I keep myself to a normalized schedule."

Group chats with classmates are important. Classes included statistics, animal biology, general chemistry 2 and a first year seminar course.



Ty Paisley points to a stereo he installed. He linked his smart phone to the stereo via Bluetooth and listened to lectures while working.

“Having group chats with people in the various classes helps all of us work out things we don’t understand, and it helps us not miss deadlines,” she said.

Newman had to deal with livestock but in a much different way. Members of UW’s highly touted livestock judging team had to convert to online judging contests instead of their usual on-location judging competitions. Team members also help at 4-H and FFA judging events during summer, but some of those were also cancelled.

The agricultural business and economics major lives outside Fort Collins but still runs into internet issues.

“It’s not great,” she said. “We are lucky to have a couple options. We can go into town where my parents still work by themselves. If we do need good internet, we can get by.”

Newman was taking six courses, some recorded and one Zoom. She liked the Zoom live presentations but also the flexibility of having lectures recorded.

Newman and other livestock judging team members competed in one online contest, open to anyone in livestock judging from 4-H through collegiate levels. Videos of four animals (goats, hogs, sheep and cattle) were posted on YouTube. Each contestant had 30 minutes to look at the class then video record and post their reasons to YouTube. A judge was sent the link. Livestock coach Caleb Boardman had all members participating.

The team had been training and was on its way to the Houston Livestock Show competition when they heard that contest had been cancelled. The event was the second big competition of the spring, the other was the Denver National Western Livestock Show and



Kiley Stevens

Rodeo in January. Team members needed to keep their skills honed for major competitions in Kansas City and Louisville this fall.

“Cancellation of (Houston) has been difficult, but it won’t set us back,” Newman said. “It was just an opportunity we didn’t get to take advantage of.”

— uwagnews.com
4/16/2020



Courtney Newman



Jahn Smylie, lead preschool teacher at the Early Care and Education Center in Laramie, takes the temperature of Sam Jensen as part of the ECEC's protocols before students enter the facility in the morning.

UW's Early Care and Education Center carries forward through pandemic

The Early Care and Education Center at the University of Wyoming was one of the earlier campus-based centers to reopen during the coronavirus pandemic even as some across the nation remain closed.

Parents, teachers and kids adapted to changes in the preschool environment. ECEC closed in March when COVID-19 hit and reopened May 26 for families that needed to get back to work. About

20 children came back at first, said Mark Bittner, ECEC director.

ECEC has been reaching out every two weeks to families who were contracted to come back for the summer. By June 15, all of the families planning to join this summer have arrived. The center has about 50 children now with normal occupancy around 85, said Bittner.

"We took it slowly," said Bittner.

The ECEC is administered by the Department of Family and Consumer Sciences in the College of Agriculture and Natural Resources.

Katie Christensen and her husband were among one of the first families to send their child back to ECEC.

"It was really wonderful to have her go back and be social with other kids," said Christensen. "That was one of the hardest parts of quarantine being that she

is an only child. She just beamed when she got to see all of her friends.”

Christensen, who works as the curator of education with the UW Art Museum, explained she and her husband weren’t really sure what it would be like to go back with all the changes but said the center made it really easy.

“They not only have embraced the philosophy of the school but also the health and wellness of the kids, and I think it’s balanced really well,” said Christensen.

Christensen mentioned everyone’s circumstances are different regarding the need to send kids back to school and encourages everyone to do what’s best for them.

“We have no regrets sending her back to ECEC,” said Christensen. “Do what’s right for your own family, without judgment.”

The facility’s staff all tested negative when ECEC reopened in May. To open, disinfecting processes had to increase, which Bittner noted was easier to implement because teachers had already been doing this.

The issue Bittner came across was finding enough supplies and sanitation materials.

“We got some really good help from the Physical Plant on campus,” said Bittner. “They were able to get us more disinfects and really good hand sanitizer.”

Bittner’s next challenge was staffing. ECEC has six full time staff and the remaining staff members are college students.

“Once the university went all online for the rest of the spring semester, a lot of our staff went home,” said Bittner.

“But I was able to convince 17 of our staff to stick around for the summer.”

Adina Bitner, a lead preschool teacher for the center, recalls the struggles of being home and constantly going through the what ifs of supplies and how to still create an inviting and welcoming environment for the kids.

“Coming back helped because we could just implement what we needed to do and if we needed to change it, we could change it,” said Bitner.

Bitner and other staff members are all required to wear masks. This required her to reconsider how that was going to change her teaching.

“Your losing half of your facial expression,” said Bitner. “As we read stories, give directions, how was that going to have to change because the mask changes what you sound like, and I had to remind myself to talk a little louder.”

Lesson plans are built around what materials could be cleaned and sanitized and how long it would take for those to dry.

“There are some materials that if we use them in the morning, that’s probably the only time, because they wouldn’t be dry quick enough, or it would take longer to clean,” said Bitner.

The center also had to change pick-up and drop-off procedures. Parents wait in the parking lot until a staff member can come get the kids, take their temperature and escort the kids into the building where they immediately wash their hands.

“I didn’t go into education thinking that this was something I’d ever deal with,” said Bitner.

Bitner noted the first few children who returned were initially excited to be back and see their friends again but after a few days, they began to have questions about other students who were not there and missing parents.

“It wasn’t a big stressor, but it was enough for us to talk about why these changes happened, and we talked about it frequently,” said Bitner.

Bitner said there have been many conversations with the kids about other kids who are not there, their feelings about missing their parents and home and reestablishing classroom expectations.

“That’s the nice thing about preschoolers,” said Bitner. “They are pretty willing to talk about things they don’t understand or things that are different.”

As more kids started to come back, Bitner noticed how the kids who had been there were able to help the new ones by explaining what was going on.

“There is a lot of empathy in that because they remember what it was like to come back,” said Bitner.

While the center has been successfully running through the summer, all involved still express concern for what will happen after Thanksgiving, with virtual classes starting and the possibility of college staff members leaving.

“There are so many unknowns right now that it’s challenging and unpredictable,” said Christensen. “But I also know that Mark and the whole crew are doing the best they can.”

— uwagnews.com 7/21/2020

Billboards promote health, fitness on Wind River Indian Reservation

Two billboards featuring a Native American in full traditional dance regalia help send a culture-specific message of the importance of health and physical activity to residents of the Wind River Indian Reservation.

The billboards, which were just south of Riverton and the other near Lander, depict John Pingree in a traditional dance with the message “More Your Way Every Day.”

The billboards, a project of the Cent\$ible Nutrition Program in the University of Wyoming Extension, went up in January, said Kelly Pingree, extension educator on the WRIR. CNP is a free, income-qualifying, cooking and nutrition education program in Wyoming that can help people cook and eat better for less money.

Kelly said the billboards are an effort to raise overall health on the WRIR.

“We have such a pandemic of obesity, diabetes and heart disease, and that’s on pretty much any reservation,” she said.

“Since we’ve gotten colonized more than 180 years ago, our lives have gotten more sedentary. There is really not a lot of moving about or having to work and hunt and gather like we used to.”

Pingree started with CNP, a program in the College of Agriculture and Natural Resources, in 2016. Billie Spoonhunter recently joined her in the CNP office on the WRIR.

“The ability to engage with local partners for community changes, in addition to direct education, has opened up ways to increase health impacts on the Wind River Indian Reservation,” said Mindy Meuli, CNP director. “Due to their community connections, Kelly and Billie have been a great asset to CNP.”

Pingree said she saw the health of the WRIR in a new light when she joined CNP.

“It really opened my eyes to how big of a problem we do have on the reservation,” she said. “I think a lot of Indian communities have really woken

up about that. There is serious talk about how we are going to change that. What are some of the ideas to change this, to start getting our people more healthy?”

The average life expectancy of Native Americans in Fremont County is about 55, according to information from Wyoming Vital Statistics in *In the Heart of Wyoming is Indian Country: Home to the Eastern Shoshone and Northern Arapaho Tribes Rich with Beauty, Spirituality, Families and Tradition* published in 2016. That compares to about 69 in the general population of the county and 71 in the general population of Wyoming.

The billboard idea began two years ago when, as a CNP member, Pingree joined a reservation group concerned about health and fitness. There were a few billboards on the reservation showing the culture and native ways.

“I brought up the idea of using the billboards to introducing CNP that way, by putting something cultural out there for people to see,” she said. “Since our



One of two billboards with a photograph of John Pingree that promotes the importance of fitness to Wind River Indian Reservation residents. The effort is through the Cent\$ible Nutrition Program in the University of Wyoming Extension.

people are more physical and visual, I thought it was a very good way to get out who we are and what we are doing out here.”

Meuli and marketing coordinator Kali McCrackin Goodenough agreed. McCrackin Goodenough, Meuli, and Pingree developed the message and started to work on the design.

“Native people relate to anything dealing with native,” said Pingree. “We had to have some sort of cultural or physical activity up there they can relate to.”

Pingree thought of the photograph of her husband taken by photographer Mike Jackson of Best of the Tetons in Jackson Hole. The photograph had been taken

near their home and featured in *Cowboys and Indians* magazine.

“When Kelly showed me the photo, I thought, ‘This is perfect!’,” McCrackin Goodenough said. “I love that the photo was taken on the Wind River Indian Reservation and that it features someone many people know.”

The message and billboard design were shown to CNP participants prior to the billboards going up. McCrackin Goodenough said the feedback was positive, and CNP went ahead.

“Any native will understand that message — traditional dancing and moving in our cultural way,” said Pingree. “Dance regalia is one of the most powerful symbols of his or her

native identity. In that regard, it can be considered sacred.”

Many outfits could be several generations old and of family design.

Pingree said she believes community reaction has been good, and the CNP logo and message are becoming more recognized.

“I have had people come up and recognize John, and then some people who don’t,” she said. “And they see the CNP symbol up there. A lot of the community has taken notice we are trying to get healthy and physical. That’s also a U.S.-wide initiative. We are starting working getting us more healthy.”

— uwagnews.com 3/10/2020

UW'S CENT\$IBLE NUTRITION PROGRAM HELPING GROW YOUNG GREEN THUMBS IN CHEYENNE



Kris Potter, a teacher at the Montessori School of Cheyenne, helps a young student plant in one of the new garden beds.

The University of Wyoming's Cent\$ible Nutrition Program (CNP) is working with early care and education (ECE) centers in Laramie County to encourage kids to grow gardens and lead them to eat more fruits and vegetables.

"The Cent\$ible Nutrition Program contacted us in the middle of May with the ability to help us get a garden started with the kids," said Tina Ustunergil, director of Kiddie Kastle daycare in Cheyenne. "We have been really excited to do some fun activities with the kids and have them learn about the importance of healthy food."

Teaching about healthy food and being active as well as assisting ECEs in making healthy policy changes is one of the ways CNP supports the health of our communities, said Mindy Meuli, CNP director. These efforts are part of a statewide effort to decrease youth obesity through the Healthy Policies Toolkit.

The Healthy Policies Toolkit was developed in 2019 through a partnership among CNP, Wyoming Workforce Services and the Wyoming Department of Health, Maternal and Child Division. The toolkit was adapted from the Healthy Kids, Healthy Futures intervention developed by Nemours, a pediatric health system in Delaware, New Jersey, Pennsylvania and Florida.

CNP can provide technical assistance to qualifying ECEs wanting to develop and implement healthy policies, but due to COVID-19 and maintaining social distancing, planned work with ECEs had to adapt.

Growing gardens is one way Laramie County CNP and its ECE partners decided to add some healthy changes.



“We are really excited to see what the garden brings the kids and the learning that they will get from growing their own produce,” said Ustunergil.

Kiddie Kastle, the Montessori School of Cheyenne, Creative Compass School, Little Friends Daycare, Cheri’s Daycare and Debbie’s House Daycare all started gardens this year.

The Montessori School of Cheyenne had wanted to begin a garden project. Working with CNP helped make that possible.

“The Montessori School of Cheyenne wanted two gardens, one for the 1 to 3 year olds and one for older children,” said Tammy Ware, CNP educator. “A volunteer built them wooden garden beds on each side of the building for each age group. I provided them with seedlings I started.”

CNP educators started the seeds for all the ECE gardens, which were planted in early June.

“When I called the Montessori School of Cheyenne, they told me that the 1 to 3 year olds got to help plant in their garden, and they loved it,” said Ware.

So far, gardening has been a success.

“Everything is sprouting up, and the kids are so excited,” Brittany Wilson and Tess Barnes, directors at Creative Compass School, stated in an email. “The kids can’t wait to get here each day to see the changes!”

Gardening helps kids build excitement to eat what they are growing, but also provides new opportunities for learning and moving.

“We are so grateful for getting the opportunity to be able to do this with our students. It’s amazing!” Wilson and Barnes stated in an email. “Our thumbs might have a tiny bit of green in them after all.”

— uwagnews.com 6/25/2020



Beau, Emily, and Daniel from Debbie’s House Daycare in Cheyenne show the fruits of their labors.

UW RESEARCH TARGETS HORN FLY SCOURGE VARIABLES



Craig Calkins enters data from cattle at the Laramie Research and Extension Center. (Photo courtesy Derek Scasta)

Two cows. Same University of Wyoming McGuire Ranch pasture northeast of Laramie near Sybille Canyon.

One cow has 383 horn flies sucking her blood; the other cow has four.

Why that remarkable difference?

Cody High School graduate turned veterinarian, turned Army major, and now a Ph.D. student at the University of Wyoming, Craig Calkins is helping UW Extension range specialist Derek Scasta unravel the mystery of a pestilence that costs the livestock industry billions of dollars in losses.

Calkins is eyeing whether shorter blood clotting times of individual animals clogs a fly's attempts, whether a thicker hide frustrates flies, and if elevation and environmental conditions, such as colder and wetter areas, affect fly parasitism.

Considered a filth fly, horn flies (*Haematobia irritans*) feast on a cow's blood, leave to lay their eggs in manure, then fly back to their beef buffet. Eggs hatch after about two weeks, and a new generation begins.

The flies pierce the hide and inject an anti-coagulant to help free the flow of blood. Cattle swing their heads, slap their tails and twitch their skin in attempts to stop the biting.

"Seeing an animal with horn flies is a really discouraging situation when you think about that animal," said Scasta, who noted the constant irritation. "Cattle producers suffer

production losses because the animal is losing blood but also because of these annoyance avoidance behaviors. Every time that animal picks its head up and swings, it's not taking a bite of grass, so grazing time decreases."

He said other scientists have found such cows produce less milk, which lowers weaning weights. The biting also slows growth rates of the younger animals such as calves or yearlings.

Some animals will be bothered more than others in any group.

"They may all look similar as far as you and I can tell, but there will be some cows infested more than others," he said. "We're trying to identify the traits those individual animals have that make them more or less susceptible to parasitism."

Calkins' study began with help from the military. The 438th Medical Detachment (Veterinary Service Support) from Fort Carson, Colo., helped draw blood from UW cattle, and Calkins analyzed blood clotting times. Hide thickness in three different areas was measured using ultrasound on cows, said Calkins.

"We were kind of surprised how fast some of the cows' blood coagulated," said Calkins, a graduate of Chadron State College who joined the Army in 2012 as a veterinarian. "Sometimes, it would be clotted in the tube before we could even get to the machine to run it."



Army veterinarians have to return to school and specialize to continue in the service. They have several options. Calkins chose public health, and the program in the rangeland ecology and watershed management at UW returned him to his home state. After eight years in the military and deployments overseas, including Iraq, Calkins is happy to be where he is.

"I can't think of a better place to be," said Calkins, who lives with his wife and children in Cheyenne, and whose travels take him across the varied vistas of his home state.

Cattle studied include those in the Bighorn Mountains and lower altitude herds at the James C. Hageman Sustainable Agriculture Research and Extension Center near Lingle. Other cattle are near Cheyenne, Cody and on the McGuire Ranch.

Calkins's study requires documenting the extent of horn fly parasitism on cattle. He noted trends across the state show decreasing horn fly parasitism in the higher elevations.

"This is related to colder temperatures as elevation increases," he said.

Full-frame, high-resolution photos of individual cows, taken just after sunup, are analyzed on computer, and the number of horn flies counted by rangeland ecology and watershed management undergraduate Cora Knowles of Santa Maria, Calif.

"The sun illuminates the whole side of the cow, so the flies are really easy to see," said Calkins. "You're counting all the flies over the body. We stratify the head, side of the legs, the belly, brisket and tailhead."

Horn flies are easy to spot.

"They are a different size and for some reason horn flies always eat with the head down so their wings are making a 'V,'" said Calkins, and added "Who knew?"

Only one side of a cow is counted. "So realistically, whatever number we come up with is likely doubled," he said.

The highest fly count was 383 noted Fourth of July last year, and that was just one side, he said.

"The next were 319, 280, 229, 219, 205 and 190," he said. "The lowest was four. So what's the difference between the cows on the top and the cows at the bottom? That's what I'm trying to find out."

The goal is to identify traits that make an animal more prone to parasitism then cull it from the herd.



Craig Calkins with animal care specialist Corporal Kathryn Elzen from Freeport, Illinois. (Photo courtesy Derek Scasta)

"Potentially removing those outlier cows that you know are super-prone to parasitism could save producers a lot of money," said Calkins.

Producers use various treatment options, said Scasta. Those include a fed-through product containing an insect growth regulator (IGR), spraying, ear tags that contain an insecticide and back rubbers that disperse a chemical.

Each has its limitations, including insects becoming resistant to the insecticides, like some weeds are becoming herbicide resistant, or the need for re-treatment.

The data from the study may help develop options that help producers save money.

"If we are going to have an integrated pest management approach, some of these other things will be really important so we can select for certain cows that are less susceptible," Scasta said.

—uwagnews.com 8/27/2020

Telehealth, efforts to soften social isolation among College of Agriculture and Natural Resources efforts during pandemic

College of Agriculture and Natural Resources personnel and programs were helping Wyoming residents wrestle the coronavirus pandemic, from involvement in the state's COVID-19 testing program and providing telehealth across two states to leveraging social media and offering financial know-how for those whose lives had been upended.

The college's key role in providing personnel, including students from the Department of Molecular Biology and Department of Veterinary Sciences, and supplies to the Wyoming Public Health Laboratory, is detailed here bit.ly/covid-19-testing.

College departments and programs donated enough personal protection equipment that seven trips were taken to Ivinson Memorial Hospital.

College departments were also assisting residents.

Telehealth techniques

Coronavirus transformed Jill Keith's therapeutic nutrition counseling class from providing in-person, on-campus counseling to telehealth sessions. The Department of Family and Consumer Sciences students were seniors working toward their registered dietitian credential.

Students counseled clients on campus in Laramie prior to COVID-19

flipping academic life. Students were in their homes, spread across Wyoming and Colorado.

"Some are doing telehealth sessions with someone in a completely different state," said Keith, an assistant professor in the department.

Students used Zoom sessions to help clients meet goals, such as beginning a vegetarian diet, losing weight or help with hypertension or blood glucose levels.

Students do not address eating disorders or other advanced health needs.

Keith said she planned to incorporate telehealth into future semesters.

"I think this has been a unique opportunity to be able to practice telehealth because you see the importance of what happens when people are isolated," said Keith. "It's really relevant in rural areas and in areas where there are no practicing dietitians."



John Connett and personal protection equipment donated from offices and departments within the College of Agriculture and Natural Resources. More than seven loads were taken directly to Ivinson Memorial Hospital in Laramie.



Cent\$ible Nutrition Program educator Marilou Vaughn (center) helped with the Riverton food distribution at Foundations for Nations Ministries, where over 1,300 people received food from Wyoming Food Bank of the Rockies in April.

Early Care and Education Center

Early Care and Education Center teachers facing a UW facility shutdown rushed to put together a document that had links for parents and children when the center first closed, commented Mark Bittner, ECEC director. ECEC is an early childhood facility in Laramie. Infant to 5-year-old children engage in curriculum to help prepare them for kindergarten.

The document combined resources that could be viewed on screens but also things that could keep children active.

“We didn’t want to give parents activities that would require their children to sit in front of the computer for very long because we know that’s not best practices,” said Bittner.

When Bittner and his staff realized it would be a longer closure, teachers started reaching out to parents to see what kind of resources they needed for their children.

The center had to improvise and find ways to keep children occupied a little bit differently than how they would at the center. Normally, there are 10 to 15 kids in a room so some activities that take place at ECEC don’t translate as well, said Bittner.

Go to www.uwyo.edu/ecec/outreach-partners to see ECEC resources.

Narrowing the elder social distancing gap

Social distancing meant those isolated to begin with were pushed further to society’s fringes. Collaboration with Age-Friendly Laramie and students sought to lessen the distance. Members of the organization are developing a call list for members of Phi Upsilon Omicron, the honor society for family and consumer sciences students.

Many of Age-Friendly Laramie stakeholders are embedded in the

community, making the group a great partner for Recognized Student Organizations wanting to help older adults who may be at risk of isolation or having needs not easily met due to being home-bound by the virus, said Bernard Steinman, whose specialty is gerontology in the department.

“The mandates to self-isolate have only exaggerated the difficulties accessing services that many of these people depend on,” he said. “Our group of relatively tech-savvy older adults have held Zoom meetings, and many have expressed that even those meetings have reduced their sense of cabin fever to a degree.”

Still, others are not so tech-oriented.

The calling project appealed to Phi Upsilon Omicron members looking for a community service project.

“We wanted a way for older adults to build a connection with the community,” said immediate past president Katie Kelley of Englewood, Colo.

The project had been in its planning stages and was expected to begin soon. Local organizations, churches, fellowship groups and others are being contacted to build a list of people experiencing a high degree of social isolation. Members of the organizations would ask for consent so people would know students would be calling.

“We’ve built a question list, fun ideas for questions we can ask them and engage in conversation,” she said. “We would also build a list of resources Laramie has put in place, or have had prior, because of COVID-19. For example, help with groceries, medical assessment

needs and provide information they may be struggling to find.”

Educators go online

UW Extension educators across the state rapidly put together resources to aid communities. Educators extend the college’s resources to all 23 Wyoming counties in addition to the Wind River Indian Reservation.

Social media including Facebook Live, Zoom and YouTube is being used to reach residents and help spread resources including events related to gardening, 4-H livestock judging, personal financial management and more. Hundreds of presentations, courses and information packages were made available digitally.

Members of UW Extension’s community development educator group have provided numerous posts for the Wyoming Saves (www.facebook.com/WyomingSaves) and the Department of Agricultural

and Applied Economics (bit.ly/ag-applied-economics) Facebook pages.

Targeted articles were developed for specific outlets, including help for small land family businesses, estate planning, protecting oneself in a financial crisis and examining the coronavirus stimulus package.

Cent\$ible Nutrition Program extending efforts

Cent\$ible Nutrition Program educators use innovative ways to support communities through digital and real-time efforts, said Kali McCrackin Goodenough, CNP marketing coordinator. CNP educators in several counties started community Facebook pages to help share resources and information. Examples include bit.ly/washakie-neighbors in Worland and bit.ly/platte-county-resources in Wheatland.

These pages provide a hub for virtual connections and a way for neighbors to help each other, said McCrackin Goodenough

CNP works with food pantries, but the COVID-19 pandemic has CNP sharing more resources specific to the coronavirus, such as how to make homemade disinfectant spray and providing recipes that use pantry essentials, as well as assisting with food distribution.

CNP educators assisted with food box, school lunch and backpack program distributions in Riverton, Cody, Wheatland, Worland and on the Wind River Indian Reservation.

Gardening information and resources are also being shared. That plus resources covering numerous subjects are available at UW Extension’s coronavirus resource page at bit.ly/uwyo-extension-covid. — uwagnews.com 5/12/2020



People wait in vehicles during distribution of food from the Wyoming Food Bank of the Rockies at Foundations for Nations Ministries in Riverton.

Wyoming tale cautionary note about storing, using old pesticides

The 80-something Wyoming man walked into his house and his wife asked, “Why are you naked?”

Warmish, June temperatures had nothing to do with the answer, but the explanation is the take-away message University of Wyoming Extension pesticide safety education program coordinator Jeff Edwards wants to get out to those applying pesticides.

Don’t use, and please properly dispose of, old pesticides that have been in sheds and garages for a long time, and using those removed from the market is not recommended. Or you, too, could have your significant other asking about your wardrobe choice.

Pesticides don’t have an expiration date, but there are reasons not to use products in storage for a long time or have been pulled from the marketplace, said Edwards.



Extension pesticide safety education coordinator Jeff Edwards

The beginning to the wife’s question actually started last year, when Edwards and those in various weed and pest districts noticed grasshopper numbers building.

“I would say there were some outbreaks last year that were indicators of what was coming this year,” Edwards said. “So (weed and pest control districts) have been preparing, but it’s a little more widespread than what I think the general public was prepared for.”

The treatment window, when the hoppers are smaller, most susceptible and applications most effective, is closing fast, Edwards said.

Edwards suggested those choosing to apply pesticides use the reduced area agent treatment process pioneered by the University of Wyoming Extension – applying the product in alternating strips to take advantage of grasshopper movements and to use less chemical.

The higher hopper numbers had people searching through their storage units and bringing out older products used years earlier.

“There are some old standbys still available, but if you haven’t stored your products correctly, those older chemicals that have been in storage may not have the efficacy we are looking for to control grasshoppers,” Edwards said.

Chemicals should be kept in a Goldilocks environment – not too hot, not too cold.

If there is a product you haven’t used for a number of years and if the solution has settled out and you can’t shake it into solution, “Then get rid of it,” said Edwards. “If you use an older



Jim Larkin, [shutterstock.com](https://www.shutterstock.com)

product and it seems to not work like it used to, it's time to get rid of the product."

Edwards isn't immune. He retrieved a product he hadn't used in a while and despite all the shaking of the container, the "clump" at the bottom wouldn't go back into the solution. One way to keep track of the age of your pesticide inventory is to write the date of purchase on the outside of the package with a permanent marker.

He suggested that pesticides you are unsure of be taken to toxic waste collection days; there are certain weed and pest control districts in the state that have toxic waste collection days, usually in the fall. Edwards recommend contacting them to find out if your local district offers this.

Some products are no longer effective, depending upon the shelf time. Malathion, for example, has a shelf life of three to five years regardless of how its stored, Edwards said. He has seen studies that show Malathion breaks down into products more toxic than the original. Other products can break down into chemicals that are non-toxic and have no effects.

The 80-ish Wyoming man had a product he had used for grasshopper control years ago and due to new safety standards had been pulled from the market. He used the chemical last year and said he had not felt well after its application and wasn't quite sure where he was.

But he picked up the same product and used it this year. Using products removed from the market is not illegal, "But there are reasons why these older products have been pulled from the marketplace because the safety standards have been improved," said Edwards.

"The fumes apparently affected him, and he walked into his garage, stripped off all his clothing, and went into his house," he said. The man couldn't remember where he was or what had happened.

"Thankfully, he recovered," said Edwards. "You really have to be cautious when using products that have been maybe a little too long in storage."

— [uwagnews.com](https://www.uwagnews.com) 7/6/2020

Grasshopper identification and management publications from the University of Wyoming Extension:

- Website with many grasshopper information resources — www.uwyo.edu/entomology/grasshoppers/.
- Rangeland Grasshopper Management — bit.ly/hopper-management.
- A Field Guide to Western Grasshoppers — bit.ly/hopper-field-guide.
- Common Wyoming Pest Grasshoppers — bit.ly/common-wyo-pest-hoppers.
- Pest Grasshopper of the West – Identification and Management Poster — bit.ly/hopper-ID-poster.

Above: Differential grasshopper (*Melanoplus differentialis*)

UW researchers try to divine secrets of toughest creatures on earth

Dinosaurs ruled these lands from 245 million to about 65 million years ago. You can see their fossils at the Wyoming Dinosaur Center in Thermopolis or take a look at Big Al, the *Allosaurus* at the Geological Museum on the University of Wyoming campus.

Wimps.

Living creatures being studied in a UW laboratory to glean secrets of toughness and possibly stabilize medical biologics have existed for 600 million years, making the rise, flourish and extinction of the dinosaurs a boring yawn in the passage of millennia for tardigrades, or “water bears.”

Molecular biology researcher Thomas Boothby and his colleagues are studying how the diminutive, less than half a millimeter long, creatures can survive being completely dried out, being frozen to just above absolute zero (about -458 degrees F, when all molecular motion stops), heated to more than 300 degrees Fahrenheit, irradiated several thousand times beyond what a human could withstand and even survive the vacuum of outer space.

That Duracell pink bunny that keeps on going and going? Please ...

“Despite being discovered years ago, we really practically know nothing about these animals,” said Boothby, an assistant professor who joined the department last year. “I’m excited about the fundamental discoveries we are making but also how we can apply those to help solve societal and global health issues.”

The viability of biologics, or pharmaceuticals derived from living organisms, like vaccines, is one of those issues. Vaccines are like Goldilocks. They’re highly picky.

“They’re highly effective medicines, but they do have one drawback and that is they are very fragile,” said Boothby. “You need to keep most biologics within a very tight temperature window to keep them viable.”

A typical vaccine manufactured in the United States and shipped to, for example, Sub-Saharan Africa and injected into a child’s arm, has to be maintained between 2–8 degrees Celsius (about 35 to 46 degrees F).

“Which for us doesn’t seem like that big of a deal,” he said. “But in remote or developing parts of the world where the electrical infrastructure is absent or extremely unreliable, it can be a huge economic and logistical burden to get these biologics to the people who need them.”

Boothby made his comments while sitting in the Animal Science/Molecular Biology Building on the UW campus in Laramie, where an early June snowstorm triggered power outages that silenced laboratories and coolers.

There are terrestrial and aquatic tardigrades, but the land tardigrades are the most resilient. When sensing dry or other lethal conditions, they roll into a ball called a tun (pronounced ton) and wait until better times.

The normal lifespan of a tardigrade is about two months, said Boothby,



An illustration of a tardigrade, also known as a “water bear.”

but tardigrades can stay in suspended animation for years. Other creatures can also go into a suspended state but don’t have the survivability of tardigrades. Those creatures manufacture a protein called trehalose, a sugar, to survive freezing and lack of water. Tardigrades don’t appear to.

But they do something else, said Boothby. They make special proteins called intrinsically disordered proteins. The function of a protein is normally determined by its shape, but intrinsically disordered proteins have no stable three-dimensional structure, he said.

Boothby said biochemists are trying to understand how a protein that doesn’t have a defined shape can still perform defined functions.

“But we think it’s precisely this disordered nature that allows tardigrades

to perform their protective functions,” said Boothby.

Boothby suggested protection is conveyed through vitrification, the transformation of a substance into a glass. The waviness in an old glass window, such as in ages-old churches, is there because molecular motion is still occurring, as opposed to a crystalline solid, which is rigid.

The difference is profound in a cell. Sharp-edged crystallized material in a cell can poke holes in membranes, shred DNA and disrupt other proteins, said Boothby.

A viscous, glass-like material is smoother and less rigid.

“That is essentially what happens when a tardigrade dries out,” he said. “They make more and more of the disordered proteins and fill their cells. The detrimental effects are slowed to

the point where they don’t take place on a relevant time scale because the inside of the cell essentially turns into glass, freezing everything in place.”

Boothby pointed out that over time, even a tardigrade will die in such a state, because just like old glass windows, the glasses inside of tardigrade cells still move, just very, very slowly.

He envisions taking tardigrade secrets and applying them to vaccines – even to dried blood.

“The vaccine still would be breaking down but so slowly you could store it at room temperature,” he said. It would eventually lose its viability.

Boothby’s lab would like to understand the concepts well enough to apply the technology to whole blood, which is made up of many different types of cells.

“There’s an increased level of complexity where you need to protect every type of cell in the blood but also protect how those cells communicate and coordinate with each other to make up the tissue we define as whole blood,” he said. “That’s one of the big projects we are working toward.”

Boothby’s lab is preparing an experiment to hitch a ride this fall on a SpaceX rocket for the International Space Station. That experiment will study if tardigrades cope with the stresses of space the same as on earth.

Information about his laboratory, personnel and research is at tboothby.weebly.com. — uwagnews.com 6/16/2020

Satellite high-tech snapshots help Wyoming students discern issues on family lands

Wyoming students in the College of Agriculture and Natural Resources are using satellite images from the U.S. Geological Survey (USGS) to gauge and improve lands owned by their families.

Photographs are from years of satellite collection and offered free by the USGS, said Ramesh Sivanpillai, course instructor, and senior research scientist in the Wyoming Geographic Information Science Center.

“Landsat is the longest civil satellite data collection we have,” said Sivanpillai. “The USGS opening the archive has created opportunities for instructors like us to integrate students.”

Jacob Disney from Sundance and Tyler Jones from Rosette applied Landsat imagery to their family properties. The two completed the course last December. Jones was interested in finding problem spots on land his family had been haying. Disney observed the incremental changes to his family’s property over the last 10 years. Sivanpillai was able to download the images over the time span.

The USGS says it provides the portal to the largest archive of remotely sensed land data in the world. Each pixel in the image represents a 100 by 100-foot area on the ground.

Students can obtain images of the land that, for example, are owned by their families. The students study an area they are familiar with, rather than working with images from anywhere around the world, such as deforestation of the Amazon or other examples in which students have no first-hand or on-the-ground knowledge of what is happening.

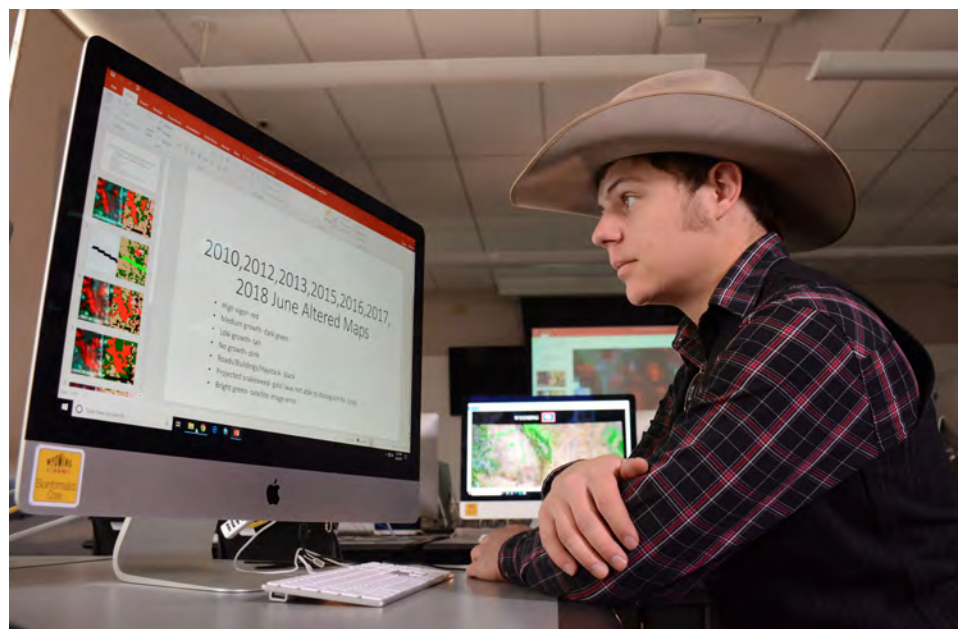
“By giving them images from their parent’s or a relative’s property, they know exactly what was done on the ground,” said Sivanpillai. “They can see how that is reflected in the images, and

they can link it to what I am teaching in my lectures.”

Remote Sensing Project Details

The remote sensing class is offered each fall, and over the years Sivanpillai has had students from 19 states, with most in the Wyoming, Montana, Colorado, Idaho, and California area. Maryland is the eastern-most state.

“This is what this free data allows us to do,” said Sivanpillai. “You don’t have to pay for the data set, and as long as the student is able to tell me where the field is and they are consulting with their



Jacob Disney

family members or supervisors to tell what crops are growing, planting dates, harvest dates, we can download as many images as we want as long as there are no clouds over the area of interest.”

Sivanpillai always tells his students at the end of a semester he’s the one who has learned the most.

“They teach me how the land was managed in that part of the state (being studied), how they harvest and explain strange patterns they find and why that is. All of that is possible because the USGS opened up the archive and revolutionized the way we are teaching remote sensing.”

— uwagnews.com 10/19/2019



Tyler Jones

Videos available

Remote sensing project details — youtu.be/Lu5btwoDiFM

Jacob Disney

- Project purpose — youtu.be/Ny9pJUmiGNA
- Findings — youtu.be/Jm78jaZqZJ8
- Outcomes — youtu.be/1EU5UCRuVEk

Tyler Jones

- Project purpose — youtu.be/n18dT-F7uRg
- Findings — youtu.be/5ANbov6So9k
- Outcomes — youtu.be/JuSL5uRCbcs

Visit uwagnews.com for the full story including satellite images at bit.ly/uwyo-remote-sensing.



Ramesh Sivanpillai

Efforts tailor sheep nutrition to Wyoming's unique production landscape

Efforts under way to sample sheep ranches throughout Wyoming to identify trace mineral deficiencies and help producers assess where their forage resources might be falling short for a particular trace mineral.

People tend to underestimate Wyoming.

As the least populated state, expectations seem to be Wyoming's contribution to the country is as limited as the households on our census.

Anyone who knows Wyoming knows this isn't true. Especially important to those interested in sustainable livestock production, we are one of the key players in the U.S. sheep industry.

Like the Wyoming assumption, trace nutrient importance, specifically zinc, for sheep tends to be underestimated. Larger scale operations and larger scale ambitions for the sheep industry as a whole require more and more acutely

refined precision management, even down to trace nutrients.

Low input - High output

Zinc is an essential micro-nutrient to sheep production. Wyoming produces high-quality sheep off the back of a rugged landscape. The physiologically challenging timepoints of breeding, pregnancy, and lactation on the sheep production calendar (fall-winter) occur when rangeland forages are at their lowest nutritional quality.

While Wyoming's output of meat and wool has been impressive, there is room for improvement. Sheep are being selected for greater productivity, but



the recommendations specific to certain nutrients haven't kept pace. Reviving and refreshing previously discovered insights can help enrich and enlighten today's practices.

Zinc and modern production

Scientists in the 1930s discovered zinc was essential for sheep production. The element is the second most abundant trace mineral in the body with important functions in:

- gene expression,
- immune function,
- reproduction,
- appetite regulation, and
- wool production.

Unlike other minerals, zinc is stored in the body in only small amounts and needs to be supplied continuously.

The zinc content of grazing diets is adequate in early summer in most cases, but in later months, zinc levels decline to inadequate concentrations. This results in suboptimal performance, especially during the most physiologically demanding times of breeding and pregnancy.

A national forage survey conducted by USDA National Animal Health Monitoring System in 1993 found 63 percent of native grasses failed to meet dietary zinc requirements for sheep. Supplying additional zinc is a best practice to alleviate these seasonal shortfalls and demanding production periods; however, ensuring zinc consumption on extensive landscapes can be sporadic and as a result, some producers opt not to provide the mineral during certain times of the year.

Complicating the present-day picture is that previously recommended zinc supplementation levels may be

inadequate for the optimal performance of modern-day sheep. "Modern-day sheep" might be a bit vague for those of us who don't eat, breathe, and speak ruminant, so here are a few statistics:

- Over the past 50 years, fine-wool Wyoming sheep have achieved selection milestones including 50 percent greater growth rates, 30 percent greater mature body size, and as a result 25 percent increases in clean wool production.
- USDA data suggests twin-bearing capacity has increased in the U.S. sheep flock since 1930.

Estimated zinc requirements need to increase from 34 milligrams/kilogram to an estimated 57 mg/kg, or 67 percent for the average ewe. Our goals for production have changed, sheep have changed, and recommending nutritional changes is important, too.

The right amount of zinc can pay dividends

Current research evaluates whether feed supplements contain adequate levels for the best health and well-being of sheep, in addition to comparing different chemical forms of zinc in sheep diets.

Recently completed research in 2017-2018 found rams grew 14 percent longer wool when fed double the recommended levels of zinc, resulting in more pounds of wool. Considering the record high wool prices in 2018, this increase in production can increase margins.

Agriculture in America thrives or dies on the margins. These same rams fed increasing levels of zinc also had greater feed conversion efficiency; they grew more with less feed when compared to rams eating the current recommended

levels, benefitting the sustainability of the producers and the environments in which they produce.

Zinc benefits extend beyond the ram. In a separate study conducted at the University of Wyoming, pregnant sheep were fed increasing levels of zinc. This resulted in a 40 percent increase in lamb survival from birth to weaning. Relatedly, collaborative work between Montana State University, UW, and the USDA Sheep Experiment Station in Dubois, Idaho, concluded ewes with lower zinc levels were associated with sub-clinical (difficult to visually detect) mastitis producing 33 fewer pounds of lamb (and \$52 less) than those with healthy udders.

Current research is examining whether greater zinc levels fed throughout pregnancy can reduce the incidence of bacterial infections of the udder, preventing lost production potential. Research from our group has found 20 percent of ewes in a flock suffer from sub-clinical bacterial infections of the udder. This intervention could save the average 400-head producer over \$4,000 a year.

There is still work to do in understanding the optimum levels of zinc in sheep diets. For example, understanding breed differences that may require additional zinc levels is an important delineation.

We are trying to more closely tailor zinc requirements to the type of sheep Wyoming raises. So far, we've discovered breed differences exist in how much zinc is transferred to the newborn lamb. Fine-wool lambs have greater zinc concentrations at birth than meat breeds. The chemical form of zinc (zinc sulfate vs. zinc amino acid complex) has shown to have differential effects on the rumen

bacteria and subsequent performance of the animal. Determining what chemical forms should be utilized, and at what ratio of zinc sulfate to zinc amino acid complex in a mineral, is a focus of future efforts.

Finally, and most important to tailoring a custom mineral for sheep ranches scattered throughout Wyoming, is understanding the trace mineral composition of the plants sheep consume at different times of the year. What are the differences in grass, forb, and shrub species, and how much zinc is actually available at different stages of plant maturity?

Efforts are under way to sample sheep ranches throughout Wyoming to identify trace mineral deficiencies and help producers assess where their forage resources might be falling short for a particular trace mineral. Conducting applied research that helps the Wyoming sheep producer while advancing knowledge in the field is a guiding principle behind these efforts.

Private industry-public institution partnerships

The next step in supporting the modern-day sheep is communicating research results to feed companies marketing products throughout Wyoming and surrounding regions. Leveraging the extension arm of the land-grant university pipeline, we'll continue to communicate translational research to industry partners and invite them to revisit their sheep mineral products.

Providing timely information to private industry also involves synthesizing late-breaking research into translational information that enhances decision making. Feed companies have repeated time and again their reliance on land-grant universities to generate the data that drives their decision-making.

In an era with fewer sheep research and extension programs we, as ever, are happy to oblige.

Authors: Whit Stewart, Assistant Professor, Department of Animal Science, Extension Sheep Specialist.

Major player in sheep industry

Wyoming is the “Wine Country” of lamb and wool production. We are fourth in total sheep numbers and third in breeding sheep numbers. Wyoming continues its tradition of making a lot with a little and comes in first in total wool production and value. Wyoming's industry makeup is uniquely larger in scale with over 17 percent of Wyoming's flocks comprising more than 300 head of ewes, compared to just 1.7 percent across the U.S. as a whole.

Chad Page, Ph.D. student, Department of Animal Science. To contact: Stewart can be reached at (307) 766-5374 or whit.stewart@uwyo.edu.
— uwagnews.com 8/12/2019



Photos: Whit Stewart

UW Extension rangeland specialist recognized with early career award

A rangeland specialist in the University of Wyoming Extension has received an early career honor from the Wyoming Agricultural Experiment Station (WAES).



Derek Scasta

Assistant professor **Derek Scasta** in the Department of Ecosystem Science and Management was presented the Early Career Research Achievement Award. WAES is the research office within the College of Agriculture and Natural Resources at the University of Wyoming.

“Scasta has an applied research program that is diverse in terms of subject matter because of the complexity of plant-herbivore interaction ecology and his desire to create useable science for stakeholders,” said John Ritten, WAES interim director.

Scasta previously served as a county extension agent with Texas A&M University for seven years before starting his career at UW in 2014.

His research is focused in individual animal characteristics and stresses, herd-level management decisions, landscape features, disturbance and seasonality and policies and public opinion.

Scasta has published over 49 journal articles and 22 extension bulletins. His research has been cited more than 100 times annually in the last two years.

Scasta is also the associate editor for *Rangeland Ecology and Management*, the journal for the Society for Range Management.

— uwagnews.com 2/4/2020

Jabbour recognized for first-year student course excellence

A Department of Plant Sciences faculty member has received a Promoting Intellectual Engagement Award, according to the Learning Resources Network (LeaRN) at the University of Wyoming.

Associate professor **Randa Jabbour** was among 35 selected from over 200 nominations. Nominees are chosen by freshman and sophomore students and selected by committee.

The award honors instructors who inspire excitement, inquiry and autonomy in first-year courses, according to its website.

Recipients are chosen based on the number of nominations and students’ comments regarding the faculty member’s success in engaging students meaningfully in course material, promoting successful transition to college expectations and fostering investment in learning.

Recipients will be honored at a reception in September (tentatively). The PIE Award is co-sponsored by LeaRN, the Ellbogen Center for Teaching and Learning, Residence Life and Dining and Center for Advising and Career Services.

— uwagnews.com 4/2/2020



Makenzie Pellissier and Randa Jabbour scout for alfalfa weevil near Lingle.

UW student’s homeless shelter design earns regional award

A homeless shelter design that addresses shelter safety concerns and noise comfort levels earned a University of Wyoming student a second-place finish in the Pacific West region in the Interior Design Educator’s Council (IDEC) competition.

Department of Family and Consumer Sciences student **Georgia**

Wollert in her senior level interior design class used Revit and 3D Max design programs to design a basic needs center for a homeless population following the student design guidelines.

The contest had 38 school submissions, including 91 undergraduate and five graduate.

“This is a huge deal and a great honor,” said Treva Sprout Ahrenholtz, senior lecturer for the design, merchandising and textiles program in the College of Agriculture and Natural Resources.

Wollert had to follow intense guidelines to meet the specifications of the center, including 20 bathrooms all ADA



Georgia Wollert

accessible, pet areas, living areas, laundry room, manicure station, and coffee bar all in a 2,500 square-foot space. Her design goals were independence, comfort, community and security.

“It was difficult in terms of organizing the facilities,” said Wollert, a native of the Lingle area.

She had to conduct primary research by interviewing shelter directors and former homeless persons to help with design choices, said Sprout Ahrenholtz.

Wollert visited a Fort Collins facility similar to the design guidelines. One of the biggest issues Wollert learned about homeless centers is many people feel unsafe.

“The purpose was to design a space where they didn’t feel like they had to watch their back all the time,” said Wollert.

She also discovered noise level was another factor that made people feel uncomfortable. To help reduce noise levels but still create a space that could be cleaned easily, Wollert chose to use a sublayer flooring under the hardwood and wooden acoustical paneling to help absorb and reduce noise.

“I really wanted to focus on how the space felt to the person and by reducing the noise, it created a more comfortable space,” said Wollert.

Sprout Ahrenholtz commented that the Pacific West region is highly competitive.

“She did not place in the top three nationally, but a regional winner is still a real feather in your cap,” said Sprout Ahrenholtz.

The full list of winners and Wollert’s project design can be viewed at bit.ly/IDECcompetition. — uwagnews.com 4/7/2020

Albany County 4-H educator shares UW engaged staff award

STEM combined with STEAM was a force that earned Albany County’s 4-H educator and University of Wyoming Coe library’s makerspace coordinator the University of Wyoming Millgate Engaged Staff award.



Mary Louise Wood

4-H educator **Mary Louise Wood** and **Jane Crayton**, who focuses on the world of Science, Technology, Engineering, Art, and Mathematics (STEAM) at Coe, formed the 4-H Makerspace Club, open to the public and serving youths 16-18-years old.

The club allows kids to explore their creative side while focusing on Science, Technology, Engineering, and Math (STEM) subjects, using 3D, robotics and e-textiles.

The club works to inspire the next generation of students in STEM using project-based art and design. Many of the projects help develop social, creative and critical thinking skills. Through the new concentrated effort in the makerspace, Albany County 4-H is seeing an increase in youth membership.

“Jane engages students with STEAM to develop critical thinking and creative skills,” said Wood. “These skills will help the students to become future innovators.”

Wyoming 4-H is the youth arm of the University of Wyoming Extension, and its state offices are housed in the College of Agriculture and Natural Resources.

The Marvin Millgate Engaged Staff Award recognizes UW staff members who both support learning and development through community engagement and build strong, reciprocal relationships between the campus and the community.

Crayton and Wood are working on additional outreach and engagement projects in their own fields. Wood has assisted in developing numerous projects and is participating in the UW Extension Impact Collaborative Experience, a professional development program to provide new opportunities for educators to bring innovation and capacity to their respective extension programs.

Crayton and Wood are an “energetic team” that is committed to engaging the local community and providing students with the opportunity to gain hands-on learning in STEM fields. They also are creating a collaborative and welcoming environment, said Jean Garrison, director of UW’s Office of Engagement and Outreach, which presents the Millgate Awards. “The recognition of Jane and Mary Louise for the Marvin Millgate Engaged Staff Award acknowledges their innovative program that has quickly built strong, reciprocal relationships between the campus and the community in a model that can be emulated in other parts of the state,” Garrison said.

— uwagnews.com 4/10/2020

Wyoming 4-H Foundation awards \$61,000 in scholarships

Over \$61,000 in scholarships was awarded by the Wyoming 4-H Foundation/State 4-H Office



scholarship committee to 4-H'ers attending the University of Wyoming or a Wyoming community college this coming school year.

Approximately \$34,500 was awarded to first-time winners this year, said Steve Mack, Wyoming State 4-H Foundation director.

Past Ella Schloredt scholarship recipients, with a grade point average of at least 3.0 and meeting academic progress, are eligible to continue receiving the scholarship for up to four years. He said 15 continuing scholarships were awarded ranging from \$1,000 to \$2,300 for the fall 2020 academic year.

Scholarships, counties, names and amounts are listed at bit.ly/4H-scholarships2020. — uwagnews.com 4/13/2020

Honor society recognizes outstanding agriculture students at University of Wyoming

Outstanding students at the College of Agriculture and Natural Resources have been selected by the University of Wyoming chapter of Gamma Sigma Delta, the honor society of agriculture.

Faculty members nominate outstanding students for these awards, and winners are selected by the chapter's membership and awards committee. Visit bit.ly/2020-canr-honors for the list of students and the awards.

Faculty members who have distinguished themselves in research, teaching, extension or a combination are also recognized. This year's recipient of the Faculty Award of Merit is **Vardges Hovhannisyan**, an assistant professor in the Department of Agricultural and Applied Economics.

— uwagnews.com 4/17/2020



Vardges Hovhannisyan

UW Researcher Receives Fulbright Award for Wildlife Research at U.S.-Canadian Border

Holly Ernest, a professor of wildlife genomics and disease ecology, has received a Fulbright Scholarship to conduct wildlife research at the Canadian-United States border.

Her project, titled "Linking Genomics, Bioinformatics and Disease Ecology for Wildlife Health at the Canada-USA Interface," outlines an interdisciplinary project of transborder collaboration,

research and advanced study based at the University of British Columbia in Vancouver, Canada.

"Part of the Fulbright program goal is for Fulbright Scholars to facilitate and build transborder collaborations for research, teaching and service, as well as the Fulbright goal of us serving as ambassadors from the United States to build positive international relations," says Ernest, who also is the Wyoming Excellence Chair in Disease Ecology. "So, my Fulbright projects and overall sabbatical projects have multiple goals."

Ernest, who already is approved for a one-year sabbatical from UW, says the Fulbright was to commence this fall. But, due to the COVID-19 pandemic, the Fulbright semester has been pushed back until January 2021. However, she adds that, if she is able to safely travel to the University of British Columbia this fall to start her sabbatical, she will do so.

For her Fulbright, Ernest will focus on three species of wildlife, applying genomics to their serious disease issues. Species include Rocky Mountain ungulates — mainly elk and mule deer — and chronic wasting disease as well as bighorn sheep and their pneumonia complex; sea otters along the Pacific Coast from California north into Canada and their serious diseases, which include fatal syndromes that involve toxoplasmosis, heart disease and thorny-headed worms; and studying migration, diseases and health of hummingbirds.

The project is designed to fulfill three main objectives, Ernest says.

- Build collaborations with Canadian experts in bioinformatics, wildlife health and ecology to develop research in transborder movement of wildlife and transmission of pathogens of importance to wildlife, domestic animals, livestock and people.
- Conduct computer-based bioinformatic research on host-pathogen data sets to evaluate relationships between host genomics and ecology of disease in wildlife species with ranges extending between the United States and Canada.
- Advance her skills and capabilities in bioinformatics, and analysis and interpretation of complex genomic and ecological data.

"The expertise I gain will enhance my research, teaching and outreach, and I will convey this knowledge to my home institution and network of collaborators," Ernest says. "This will



Holly Ernest

be accomplished through a program of study with the unique and expertise-rich academic and professional community at the University of British Columbia and the Greater Vancouver region.”

Ernest says her initial inspiration for applying for a Fulbright was Sue VandeWoude, a professor at Colorado State University’s College of Veterinary Medicine and Biomedical Sciences. VandeWoude was awarded a Fulbright to travel to Tasmania to grow her collaborations and research on virus disease ecology and quantitative modeling to answer important questions to help wildlife conservation.

VandeWoude and Ernest collaborate on mountain lion genomics and viral disease ecology for populations in California and the Rocky Mountain West.

“This award is a big deal to me,” Ernest says. “It is a huge honor, and many people helped me to develop the plans and proposal for it. It definitely is a ‘village’ and transborder team effort.”

Ernest has been a member of UW’s faculty since 2015. She received her Ph.D. in ecology from the University of California-Davis; her Doctor of Veterinary Medicine and her master’s in veterinary physiology and pharmacology, both from Ohio State University; and her bachelor’s degree in biology from Cornell University. — www.uwyo.edu/uw/news 5/4/2020

Gigley receives Fulbright Scholarship to study how to combat dangerous foodborne pathogen

Jason Gigley, a University of Wyoming associate professor of molecular biology, received a Fulbright Scholarship to study how nutritional immunity and disease tolerance can be used to combat *Toxoplasma gondii* (*T. gondii*), a dangerous foodborne pathogen that can kill people with immune deficiencies as well as developing fetuses.

T. gondii is a major health concern for people whose immune systems are weakened, as well as for developing fetuses; and as a cause of depression and neurocognitive changes. Infection with this parasite can result in different pathologies that can cause tissue damage in the stomach, retinas and brain.

“My goal as a Fulbright Scholar will be to test how nutritional immunity and disease tolerance work to promote immunity and reduce pathology during infection with *Toxoplasma gondii*,” said Gigley. “To date, there are no fully effective vaccines or therapies



Jason Gigley in his laboratory in the College of Agriculture and Natural Resources

that can completely eliminate this infection that is present in at least 30 percent of the world’s human population.”

For his project, titled “Understanding How Host Available Iron Impacts Nutritional Immunity and Disease Tolerance during *Toxoplasma gondii* Infection,” Gigley will focus on discovering new therapies or vaccine approaches to meet this critical need.

The objectives of the project are:

— To investigate how nutritional immunity impacts *T. gondii* infection. The movement of available iron from one location to another in the body can limit access of iron to pathogens to control infection called nutritional immunity.

“Our research will investigate how nutritional immunity, a process by which a host prevents a pathogen from getting iron, works in the context of an intracellular parasitic infection called *Toxoplasma gondii*,” Gigley explained. “We can increase or decrease levels of iron in our infection model and see how this affects the infection and immune response.”

— To dissect how disease tolerance impacts immunity to *T. gondii* infection. Disease tolerance counterbalances immune responses by protecting tissues to prevent immune pathology as the immune system functions to eliminate pathogens and diseased tissues.

Gigley says he will investigate how moving iron around in the host affects the level of tissue damage caused by the infection to understand how to help people survive when they are infected with this parasite.

“There is a critical need to find additional and new therapeutic targets to treat this infection,” Gigley said. “Our proposed research on nutritional immunity and disease tolerance could lead to development of a cure, which is desperately needed.”

He said the research will take place in Portugal because one of his collaborators, Miguel Soares, is a cell biologist and one of the world's leaders in studying nutritional immunity and disease tolerance. Gigley said he and Soares will publish their work as collaborative primary research articles in high-level journals. He added that they also will present the results of their research at international and national meetings.

"The Fulbright is a huge honor, and I am really shocked that I received this scholarship," Gigley added. "Receiving this award means a lot to me as a researcher and professor because it will allow me to visit and learn from one of the world's leading experts about a cutting-edge area of research. This award will allow me to bring these new ideas and opportunities back here to the University of Wyoming for my own lab and students that I teach."

Gigley has been a member of UW's faculty since 2012. He received a bachelor's degree in freshwater and marine biology from the University of New Hampshire; his Ph.D. in microbiology and immunology from Dartmouth Medical School; and completed his postdoctoral fellowship work at George Washington University Medical Center in the Department of Microbiology, Immunology and Tropical Medicine.

— uwagnews.com 5/14/2020

College of Agriculture and Natural Resources personnel receive honors as part of Staff Recognition Day

Three members of the College of Agriculture and Natural Resources received university-wide honors in this year's Staff Recognition Day program.

This year's Staff Recognition Day was canceled because of the COVID-19 pandemic. Staff Senate recently posted all award winners at www.uwyo.edu/staffsenate/recognition.

Awards and recipients are:

E.G. Meyer Family Award: **Mona Gupton**, Department of Family and Consumer Sciences, senior office associate. \$1,000 and a plaque. This longest-standing staff award on campus honors two current UW staff members (one non-exempt and one exempt) who show initiative, helpfulness, dependability and a positive and cheerful demeanor.



Mona Gupton

Off-Campus Award: **Michael Albrecht**, Sheridan Research and Extension Center, assistant farm manager. \$1,000 and a plaque. This award honors two staff members who work off the main UW campus and display an outstanding attitude toward furthering the mission and goals of UW off-campus.



Michael Albrecht

Pete Simpson Golden Gloves Award:

Jennifer McKenna, Department of Veterinary Sciences, laboratory technician. Plaque. This award was founded in honor of outstanding staff/faculty member Pete Simpson and recognizes one current Staff Senate member who shows outstanding participation on their Staff Senate committee(s), participation at full Staff Senate meetings, outstanding service for Staff Senate causes and strong representation to constituents.



Jennifer McKenna

— uwagnews.com 5/18/2020

Alyssa McElwain named recipient of UW Faculty Engagement Award

Family and consumer sciences Assistant Professor **Alyssa McElwain** is among four recipients of the 2020-21 Faculty Engagement Fellowship awards.

McElwain received the Office of Engagement and Outreach's (OEO) Malcolm Wallop Faculty Engagement Fellowship. The award is funded through the Malcolm Wallop Civic Engagement Program that focuses on work connected to civic engagement through discussions and work on issues of significant public interest.



Alyssa McElwain

McElwain will continue her work that focuses on healthy relationship education for youth, while expanding to engage more students with workshops, curriculum and online programming. She will collaborate with Upward Bound on her project.

The fellowship competition attracted proposals from a broad range of disciplines across UW, from people working in public engagement, engaged teaching, engaged scholarship and outreach focused on community impacts.

The other three UW recipients are Nga Nguyen, a Department of Electrical and Computer Engineering assistant professor; Tiger Robison, a music education assistant professor; and Reshmi Singh, a social and administrative pharmacy associate professor.

The awards are for faculty members working on projects during the 2020-21 academic year. Fellows receive a stipend of \$10,000 and up to \$2,000 to support outreach programs and travel expenses. Recipients will work with OEO Director Jean Garrison and members of the UW Engagement Council to develop their projects and organize at least one significant outreach program series both on and off campus. Projects focus on faculty development or enhancing engagement and outreach in their respective fields of study.

McElwain's project, titled "Relationship Education and Leadership: Promoting Healthy Relationships for Wyoming Youth," expands on her Relationship Education and Leadership program. Both projects focus on healthy relationships.

Her fellowship project will expand the development and implementation of online programming content for Wyoming youth on preventing dating violence and promoting healthy relationships. A peer-education model to offer learning and professional development opportunities for undergraduate students in the social sciences also is part of the project.

The project will deliver new evidence-based relationship education curriculum for online delivery and train undergraduate students to deliver the in-person and online relationship education curriculum. McElwain will assist trained undergraduate students in delivering a series and one-time educational workshops to UW and high school students in Laramie on healthy and safe relationships.

She has collaborated with Upward Bound at Laramie High School and the UW Wellness Program to expand to a greater number of students in the state.

A partnership with UW Athletics has led to a larger number of student-athletes attending the leadership development and Relationship Smarts programs. This year, delivery for the programs will be transferred online through WyoLearn, allowing students to work through the material in a free, self-paced environment, McElwain says.

"Dr. McElwain's research on healthy relationships with youth and the involvement of her students in this work truly embody the importance of faculty partnering with students," said Garrison. "This OEO Malcolm Wallop Engagement Fellowship

will build a sustainable program that can be made available to the state as a whole." — uwagnews.com 6/8/2020

Former family and consumer sciences professor honored for distinguished service

A retired professor in the College of Agriculture and Natural Resources is receiving a national Distinguished Service Award from the American Association of Family and Consumer Sciences.

Virginia "Ginny" Vincenti, professor emeritus in the Department of Family and Consumer Sciences, was presented the award this summer in Baltimore, Md., at the association's annual conference and expo.

The DSA is presented to outstanding members for their professional achievements and sustained leadership, according to the AAFCS.

Vincenti joined the Department of Family and Consumer Sciences in 1992 and retired in 2017.

"Virginia has had a distinguished career and a large impact on the field of family and consumer sciences nationally and internationally, as well as here in Wyoming," said Christine Wade, family and consumer sciences department head at UW.

Wade notes that Vincenti has dedicated her life to the betterment of the lives of families and continues to pursue grants and contribute to research regarding elder family financial exploitations.

"Vincenti is a very deserving recipient of this honor," said Wade.

Sharon Nickols, past AAFCS president, said Vincenti throughout her career as an educator and administrator has inspired others with her keen intellect, comprehensive understanding of the history and contemporary relevance of family and consumer sciences, and dedicated service to the profession and its various entities.

Vincenti has served in 18 AAFCS leadership positions and in 2003-04 served as president. Following her service as president, she was the executive editor for the Family and Consumer



Virginia Vincenti

Sciences Research Journal and was a member of the nominating committee and public policy committee.

Vincenti co-edited “Rethinking Home Economics: Women and the History of a Profession,” which provided perspectives on the profession from home economists and women historians.

“Virginia has been a voice and a force for documenting and understanding our history,” said Bonnie Braun, AAFCS president, 2007-08. — uwagnews.com 6/16/2020

UW Extension Communications, Technology Office Receives Recognition

Entries from the Office of Communications and Technology in University of Wyoming Extension recently received honors from the Association for Communication Excellence (ACE).

The awards were announced during the organization’s virtual conference in June.

A photograph of the draft horse team of Pistol and Pete earned two gold awards. The photograph was taken by **Steve Miller** during the Bronze Boot exchange between the UW and Colorado State University ROTC members last November. The team ceremonially hauled ROTC students and the Bronze Boot from the border about one-half mile, where the students then relay-ran the game ball to Laramie. Colton Sowards drives the team, while handlers Travis Smith and Elias Hutchinson are in the wagon. The Bronze Boot competition began in 1968 in honor of the rivalry between Colorado State and UW.

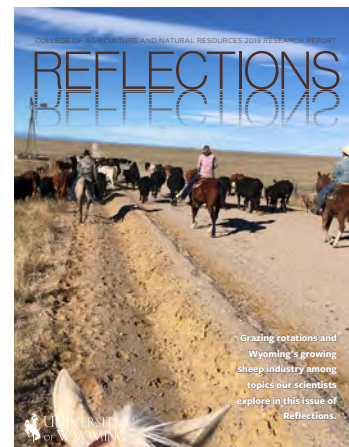
The photograph won golds in the service photo and social media single item categories. The Bronze Boot photo gallery on



Colton Sowards handles Pistol and Pete, the draft horse team of the College of Agriculture and Natural Resources, during the 2019 UW-Colorado State University Bronze Boot exchange on the state border.

Facebook may be found at bit.ly/pistol-pete-border.

Reflections, the research magazine of the College of Agriculture and Natural Resources, received a silver award in the technical publications category. The Wyoming Agricultural Experiment Station magazine is produced by the Office of Communications and Technology and highlights research in each of the college’s departments and also spotlights a student’s research. Miller is the editor, and **Tanya Engel** is the graphic artist. The 2019 issue is at www.uwyo.edu/uwexpstn/publications/reflections/.



A photograph by Tanya Engel for a Cowboy Branded Meats campaign earned a bronze in the association’s enhanced photo competition. The UW Meat Lab and UW meats judging team make and sell meat sticks and summer sausages as a fundraiser and as a way for students to gain experience. They released several new flavors and wanted a photoshoot for images used for marketing purposes including social media, banners, posters and displays. — www.uwyo.edu/uw/news 7/13/2020



This product image is from a suite of photographs taken to promote new flavors for Cowboy Branded Meats meat sticks and summer sausages.



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