animal & range sciences newsletter

Summer 2020 • Volume 13, Issue 1

Tenacity In the Midst of the Unknown: ANRS & COVID-19

It is unavoidable that COVID-19 be the headline of our summer newsletter. While our students were gone on spring break, the decision was made to close campus in order to keep our faculty and student's safety the number one priority. So how did we carry on you might ask?

Our ANRS faculty made the transition to teach remotely with only one week of preparation. Despite the short notice, everyone tackled this task with creativity and grace. Some methods of remote teaching were using Desire 2 Learn, MSU's online learning management system and recording lectures with Techsmith. Other classes used voice over recordings with power point slides, video recording of lab demonstrations, Facebook live events, Webex, or even conference phone calls.

Dr. Jane Ann Boles filmed her meat labs and used online discussion forums for her classes. Dr. Craig Carr continued to have weekly plant tests for his Vegetation of Western Wildlands course, using photographs for his students to identify. Hannah DelCurto's Steer-a-Year students were still responsible for tracking steer performance, now with weight information being sent to them remotely. Dr. Hayes Goosey created a Facebook page for his Sheep Management course, collaborating with Brent Roeder and Center of the Nation Wool to do unique Facebook live

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From the Department Head

Dr. Patrick Hatfield
Department Head

While this semester was a challenge for our students and faculty, we have reached the finish line. We are so proud of our whole department for handling the transition to teaching and learning remotely. During a time of uncertainty, everyone stepped up to the plate. Congratulations to our graduates for finishing a challenging last semester, we are proud of you and your willingness to adapt.

In the midst of working around COVID-19, we had many great triumphs within our department. We were able to donate lab supplies and general PPE to the hospital, research continued, Livestock Operations kept calving and lambing running smoothly. And many more that you can read about in this newsletter!

Our 7 year review was unfortunately postponed. We are working on plans to reschedule in the fall, hopefully at the same time as our department advisory committee meeting.

I would like to give congratulations to Dr. Lance McNew and Dr. Megan Van Emon for being awarded tenure and promotion to associate professor. I would also like to congratulate Dr. Jeff Mosley for receiving the 2020 Impactful Outreach and Community Engagement Award.

We have a lot of new faces in the department. Jared Beaver joined us as the Wildlife Extension Specialist. We also welcome Rodrigo Marques and Daniele Ruocco to the Assistant Professor of Ruminant Nutrition and Lab Manager positions. Sarah Maninger started as Manager to the Wool Lab, along with Kellen Marlow as Red Bluff Sheep Foreman, Luka Mueller as our Town Foreman, and Laura Bratz as an Admin Team Member. Once the travel ban is lifted we will be interviewing a candidate for the Farrier School Director positon.

We are excited to welcome these arrivals, and wish others well who have left us. Tyrell McClain left our farm crew to work with Turner Enterprises in Nebraska, Ben Wheaton, Lab Manager, is pursuing his Post Doctorate in Sweden, and Sharon Henderson, Admin team, left to work across the street at the Department of Research Centers in Linfield Hall.

We are preparing for the rest of 2020. At this point we are looking forward to having our students and faculty back on campus in the fall, with the necessary safety precautions.

Wishing everyone a safe and healthy summer.

In This Issue

presentations. Dr. Racquel Lindroth received training on the “Three Pillars of Remote Distance Teaching,” and said she is “learning new tricks, collaborating with colleagues, staying positive, and aiming to create an engaging learning experience.”

Andi Shockley teaches various horsemanship classes, and due to the hands on, physical nature of these classes she had to get very creative transitioning to online teaching. Her students had to complete a total of 60 points a week, with tasks varying in points such as a physical activity (at least 30 minutes,) finding trails that are suitable for riding, designing games and puzzles featuring equestrian themes, designing a pattern or test for someone to ride, a creative “Horsetacular” journal entry, community service/outreach, helping a family or friend, finding humorous or “horsey” quotes, pictures of you doing fun activity, learning new knots, and horse trivia.
These are just some examples of the many ways our faculty adapted to a form of teaching many had never attempted before. We are so impressed with the creativity, flexibility, and tenacity shown by all members of our department; students, faculty, and staff alike.

A campus wide distance learning survey was sent out, which received a 28% response rate. Respondents were largely but not perfectly representative of the student body. 88% of students connected to all of their courses in either Brightspace, meeting online with their instructor, e-mailing, texting, or phone conversations with their instructor, or was contacted by their instructor. 5% of students connected in all 4 ways, and 5% said they connected on only some of their classes in anyway. Some of the different platforms used were Brightspace, Zoom, WebEx, Techsmith, and many others. The most common difficulty reported across all platforms was lag/drop from internet connections. The survey also inquired about students’ plans for fall registration. 77% plan to enroll at MSU in the fall term, 17% will graduate by then, some of them enrolling for future study at MSU, for an unduplicated total of 93% planned successful outcomes.

MSU decided to implement an expanded Pass/Fail (P/F) grading option for all undergraduate courses for the spring semester. These circumstances necessitate extraordinary measures to accommodate challenges faced by students and faculty in managing personal matters during a pandemic, while simultaneously navigating a new course delivery method.

To ensure that necessary research continued on, our department operated at a “Level 2 Operational Level.” A written proposal needed to be submitted that outlined how research would be managed and designated no more than three lab members as essential staff. The proposal needed to outline procedures to ensure social distancing, such as rotations or driving separate vehicles for example. No new experiments were allowed, only experiments that if discontinued would generate significant financial or data loss. Our research buildings were also locked to limit exposure.

The performance at our Montana Agriculture Experiment Stations was uninterrupted by the mandated stay at home order, due to agriculture being an essential service. They ran with a limited number of staff members and practiced social distancing. As we know agriculture must go on and our animals need care no matter what is happening in the world, and our farm crews did an excellent job keeping operations going. Read more about updates from our M.A.E.S. on page 11.

We have students planned to go out on internships this summer, to both local, regional, and national locations. We look forward to hearing about these students’ experiences when they return in the fall.

Our lives may look different moving forward and masks may become everyone’s new fashionable accessory, but the hard work and dedication to agricultural education from our department will always remain the same.

In the News

Spring 2020 Wool Market and Pool Update

Photo supplied by Brent Roeder

While most of Montana has been on lockdown, shearing crews continued their work under exemptions provided by Governor Bullock and with guidance on staying healthy from several international shearing organizations. Shearing was completely halted in New Zealand under a very strict thirty-day lock down, but continued in Australia with restrictions. Now that we have about ninety percent of the state's wool harvested and lambing is in full swing, I am getting numerous calls on how to best market this wool clip. This letter will attempt to summarize the most current information regarding wool marketing and government programs related to wool.

In review, the domestic wool market is essentially at a standstill. Most wool warehouses are still accepting small lots of wool for storage, but very little wool is actually being bought. As you may remember, the wool market last spring (2019) started to decline due to uncertainty caused by the trade tariff dispute with China. About 75% of the US clip is shipped to China or other countries for processing and buyers were reluctant to purchase US wool not knowing the tariff costs. Then in the fall of 2019, the coronavirus issue erupted in China and most of the big Chinese wool processing mills and ports were closed. The current situation is that China has reopened its mills and ports, but due to the lockdown in the US and other Western countries, most orders for wool products have been cancelled. Speaking with wool buyers and industry leaders, most feel it will be the fall of 2020 at the earliest before any significant amount of wool will be sold in the United States. There are military contracts being filled from wool currently in storage, but they have also greatly reduced their expenditures. Currently the Australian Wool Exchange is still trading wool and prices are not bad. They are certainly not at the historic levels we saw over the past two years, but well put up, finer clips will still bring good money when economies open up again. The advice of most industry people I have spoken with is to either store your wool properly at home, deliver to a wool warehouse or deliver to a wool pool to get it cored and wait till this fall for marketing opportunities.

On the wool testing side, hopefully you are aware that the Yokom-McColl wool testing lab in Colorado closed this February. As they provided most of the certified core testing services for wool marketing in the United States, the industry has been working on a replacement plan. The wool lab at Texas A&M in San Angelo was identified by the industry to become IWTO (International Wool Testing Organization) certified to provide commercial wool testing. As this is a large,expensive undertaking, it will still be many months before they have this capability. In the interim, the New Zealand Wool Testing Authority was identified.

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In the News

Unfortunately, the NZWTA (New Zealand Wool Testing Authority) lab has been closed for the past month due to their country's coronavirus lockdown, so we have been unable to get any certified cores on US wool. We are not allowed to ship raw wool to Australian labs due to phytosanitary restrictions. Fortunately, the New Zealand lockdown is set to expire April 24 and they will be able to start processing samples the next business day with new health protocols to protect workers. The Montana Wool Lab does not have the ability to run commercial grade cores as certified by IWTO. If Texas is unsuccessful in their attempt to become IWTO certified, the Montana Wool Lab will probably pursue the option, if we receive funding for a new lab or improved lab. The Montana Lab is potentially on the Montana University System building priority list for the 2021 legislative session. A final priority list will be voted on at the May meeting of the Board of Regents. With the expected budget shortfalls due the shutdown, we will have to see if any funding will be available.

As we have had good wool market conditions for many years, many people have never had to apply for government programs on wool. I spent the last week discussing government programs with USDA Farm Service Agency (FSA) officials, Dr. Kott (retired Montana Sheep Specialist) and industry leaders to try and summarize those programs. There are still many unknowns at this point, but I will update you on several options that producers have available. I highly encourage producers to speak with their local FSA office to make sure they are eligible and how to qualify for any government programs concerning wool as each county and every state interprets rules differently.
There are three options available currently for Montana wool producers through the FSA:

1) Marketing Assistance Loans (MAL's)-You borrow money against the future sales of your wool and then repay the FSA when you market your wool. Gives producers cash for operating expenses when markets are depressed.
2) Loan Deficiency Payments (LDP's)-There are two types: graded and ungraded. Graded is when you core your wool and get a certified test and ungraded is when your wool is not cored or mixed with other producer's wools.

One of the main things to realize when delivering wool is you lose beneficial interest in the wool when you deliver to a pool. Wool pool members are not eligible for either the Marketing Assistance Loans (MAL) or the "graded" Loan Deficiency Payment (LDP). To be eligible for either of these, a producer has to maintain control/possession of their wool, core the bales, weigh the bales on a certified scale, send the samples to NZWTA and provide the FSA with a certified core for their wool. Currently there are "graded" LDP's available for very fine and very coarse wool and the American Sheep Industry has been working with USDA to clarify some issues with wool price reporting to help make these programs more realistic. When you figure the cost to get a certified core with shipping is around $150 dollars, only larger growers will find it beneficial to pursue that option. Wool pool members are eligible for the "ungraded" LDP which is currently sitting at $0.02 per pound of grease wool. Pool members interested in the ungraded LDP need to file an intent to collect LDP paperwork with the FSA office prior to delivery and then take in the weigh slip after delivery to verify their poundage with the FSA office. I would encourage producers to apply even for the $0.02 as this may move significantly by May and any future payments could be tied to this filing. You can find current information on wool LDP rates at https://sheepusa.org/issuesgovernmentprograms-woolldp. The following link will take you to the USDA page concerning MAL's and LDP's.
https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/2016/mal_ldp_2016.pdf.

by Brent Roeder, MSU Sheep and Wool Specialist

Education Opportunites For Young People Desiring Ag Careers

"TODAY THERE ARE MANY EDUCATIONAL PROGRAMS THAT CAN HELP YOUNG PEOPLE WHO HOPE TO FIND A CAREER IN VARIOUS AGRICULTURE INDUSTRIES. MANY COLLEGES AND UNIVERSITIES OFFER COURSES IN AGRICULTURE, ANIMAL SCIENCE, RANCH MANAGEMENT, ETC."
-HEATHER SMITH THOMAS, AMERICAN CATTLEMEN

Rachel Frost, Program Lead, Dan Scott Ranch Management Program (Montana State University, Bozeman) says this new program at MSU provides a 4-year bachelor's degree in Ranching Systems. "This covers Animal Science, Rangeland Ecology and Management, as well as Business, equal credits are offered in each of those three disciplines," she says.

"This is a multi-disciplinary approach to train ranch managers and combines the academic requirement with two internships. Students serve an internship with a ranch we match them with, between their sophomore and junior year. They go back to that same ranch for a second internship the summer between junior and senior year." This provides hands-on experience doing many things and is a good combination of intensely applied academic foundation in sciences and actual experience with the internship.

This is a limited admission program. "Students can declare Ranching Systems as a major when they arrive as freshman, but partway through sophomore year they have to apply, and must be accepted and go on," says Frost. To be accepted, students need to have earned or be in the process of earning 40 credit hours toward the Ranching Systems degree and have at least a 3.0 GPA. "They must supply a resume, letters of reference, current transcript, and a letter of intent stating why they want to be in the program and what they think it will do for them. They must answer essay questions about the ranching industry and trends," she explains.

After the application is graded, they go through a face-to-face interview with members of the steering committee. This is a way to sort applicants and accept the ones most likely to do well and benefit from the program; it is limited to 10 students per year.

This program started July 1, 2019 and opened for applications last fall. "Along with the internship and curriculum degree we want to incorporate as much out-of-classroom experience and educational opportunity as possible. We took in a soil health symposium recently and a ranching profitability course. We are partnering with NRCS, conservation districts and non-profits; they help by waiving registration fees for students to attend these educational opportunities across the state," she says.

There are more ag-education programs starting around the country to encourage young people to go into ag careers, and there are plenty of jobs available. "We're seeing a change in demographics as more of the people who purchase ranches are landowners but not ranchers," Frost says. They want someone to lease their places and run cattle, or someone to manage their ranch.

The need for professional managers in increasing, along with a need for more integrated multi-disciplinary training for young folks who want to go back to a family ranch and be the 4th or 5th generation who can operate it. There may be generation who leaves the ranch and goes into another career and their kids want to go back to the ranch, but don't have the experience and education needed. This kind of ag program can be very helpful for them.

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In the News

"This program is funded by private partners, through the MSU Foundation and donations by ranch and business owners who believe in the need to train young people. Our donors appreciate the close relationship we have with the ranching community and want to maintain that. We are also fortunate to have some great ranches near Bozeman, who understand the difference between an intern and summer help. These ranchers are working with us to make sure we meet the educational needs of these students rather than just sticking them out on a fence-line all summer." They do need to experience a variety of jobs. For more information on this program a person can look at the website: http://animalrange.montana.edu/danscottmanagementprogram.html.

by Heather Smith Thomas, The American Cattlemen, May 2020

Avoiding Algae Issues in Stock Ponds

Tommy Bass, Livestock Environment Associate Extension Specialist, was a Featured Contributer to Lives and Landscapes Spring 2020 Edition.

An important strategy for reducing the risk of algae blooms is to reduce nitrogen and phosphorus transport into surface water. While dissolved and particulate nutrients are carried into water by natural processes, excessive nutrients increase algae growth. Nutrients originate from various sources, including lawns and landscaped environments, agricultural lands, and contributions from wildlife, livestock, and even human wastes.

When planning conservation opportunities associated with livestock and water, the following philosophy can be helpful, "Keep clean water clean and avoid direct contact." The first part is in regard to diverting stormwater away from pens, corrals and heavy use areas to keep them as dry as possible. This has benefits in overall animal health and foot health for all livestock, particularly horses and cattle. For livestock headed to market, clean cattle are often regarded more favorably and may bring better prices. Less mud in corrals and pens also improves the comfort and safety of workers and working horses. From a water quality standpoint, drier livestock environments reduce potential for contaminated runoff from these areas.

Best management practices to, "Keep clean water clean," include diverting stormwater from corrals, pens and heavy use areas through the use of berms, ditches, or grassy swales. Additionally, gutters can be added to barn and shed roofs to divert rain and snowmelt away from these areas where livestock congregate. When corrals and pens are due for renovations, consider moving them further uphill. Many old facilities were built in coulees for shelter and access to natural water sources; however, with modern watering technology, corrals and pens can be relocated uphill from these areas and provide cleaner, healthier water in tanks and troughs. Once clean water enters livestock environments, it is then considered wastewater.

The second part of the livestock and clean water philosophy, "avoid direct contact," refers to the benefits from limiting or excluding manure and confined animal contact with surface water and well heads. In confinement areas, such as seasonal feeding, lambing and calving lots, animals should have no direct contact with surface waters. This is different from pasture and rangeland scenarios where some strategic access to streams as part of a managed riparian grazing plan can be an important part of a sustainable system.

Cattle congregating near an earthen stock pond can rapidly degrade the water quality in the pond to the detriment of the animals' health and the quality of the resource. Strategies that encourage

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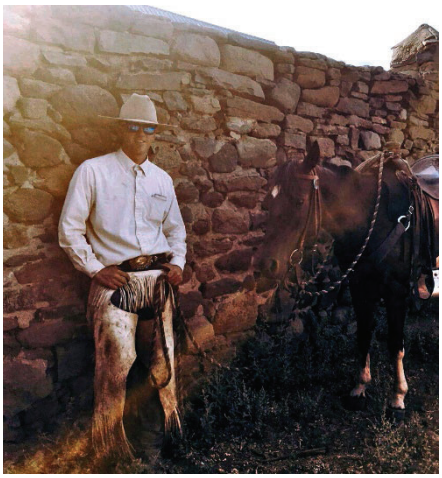
livestock to enter, drink, and move away from the watering area are good for animal health and water quality. Aside from the point of access, a vegetated or riparian buffer around the rest of the pond or stream will allow nature to filter out nutrients, sediment, and other pollutants. There are several best management practices (BMPs) that encourage cattle to spend less time loafing near water sources. A few strategies include providing minerals and supplements, water tanks, shade, or windbreaks on higher ground away from ponds and streams.

After a harsh winter and spring, winter pastures can look like a bare lot. Compared to natural and vegetated areas, bare and/or compacted soils are more prone to runoff during rain events, causing soil and nutrient loss. There are practices that can alleviate the impact on these areas, improve their utility for the next season, and reduce pollution potential. During the times these pastures or large corrals are occupied, feed bunks or hay feeders should be periodically moved around the pasture. Rotational grazing strategies and pen/pasture rest periods can be implemented for all seasons. Dragging high use areas with a chain harrow can break up and spread manure around the pasture and distribute nutrients, encourage grass regrowth, and improve soil quality.

Simple management steps year-round can result in better water quality, more efficient use of ranch infrastructure, healthier livestock, and improved overall productivity. These investments in conservation can help preserve the water quality and utility of earthen stock ponds and other resources, especially near the end of summer when water and grass resources become more scarce.

By Tommy Bass, Lives and Landscapes Spring 2020 Edition

MSU Ranching Systems Degree Accepts First Student



Tristan Bess, first student accepted into the Ranching Systems Degree Program at MSU

In the spring of 2019, before the Ranching Systems Degree was officially available to students, before the Dan Scott Ranch Management Program was a reality, Tristan Bess began making plans to be part of this new program at Montana State University. Originally from Elk Grove, CA, Tristan was raised around horses and cattle and his parents modeled a strong work ethic and the value of life-long learning. At 17, Tristan left home to work on a large ranch in Nevada and knew with certainty that ranching held his future. Since then, Tristan has worked for ranches in Oregon and Nevada and combines his livstock experience with a humble, eager to learn attitude that makes him an excellent student for the program. Tristan transitioned form pursueing a degree in Natural Resources Rangeland Ecology to Ranching Systems. Ranching Systems is a limited admission program that requires students to apply for admission during their sophomore uear. Bess submitted his lengthy application and following an interview with members of the steering committee was accepted as the first student in the program. “The true genius of the Ranching Systems degree is that it is holistic; much like a ranch managment job, developing knowledge in rangeland ecology, animal science, and agriculture business”, Tristan wrote in his application. There are numerous challenges facing the ranching industry, and Tristan realizes the need for a keen mind coupled with a strong knowledge base in these disciplines to successfully perform as a ranch manager. When asked the most important characteristics of a ranch manager, Tristan replied “Communication, organization, and leadership.” He elaborates that these skills are “*rather easy to talk about, but require a conscious and disciplined mind to enact and evaluate”.* “This self-awareness, commitment to hard work and understanding of the attributes needed in this industry, is what will make Tristan an exceptional contribution to the ranching industry upon graduation” says Dr. Rachel Frost, Program Lead for the Dan Scott Ranch Management Program (DSRMP). Tristan will start an internship with a partner ranch in May of 2020.

Dan Scott Ranch Management Program 2020 First Quarter Newsletter

Provost's Lecturer Series to continue Feb. 11 with discussion of microbial communities

Carl Yeoman of the Department of Animal and Range Sciences in the Montana State University College of Agriculture will present "An Important Microbial Community Lives in All of Us," on Tuesday, Feb. 11 as part of the 2019-20 Provost's Distinguished Lecture Series.

"An Important Microbial Community Lives in All of Us," may be the title of Carl Yeoman's upcoming lecture, but the "us" could apply to any number of organisms in Yeoman's research portfolio: humans, primates, cattle, sheep or even tiny wheat stem sawflies. He examines each of those and more in his work in Montana State University's College of Agriculture.

Yeoman, a faculty member of the Department of Animal and Range Sciences, describes his work as "studying host-associated microbial communities for the betterment of human health and agriculture." His projects are diverse, ranging from examining microbes in the human reproductive tract that influence the risk of contracting sexually transmitted infections to exploring microbes inside insect pests in an effort to develop novel biocontrol methods. He will reflect on that diversity in the next installment of the 2019-20 MSU Provost's Distinguished Lecturer Series on Tuesday, Feb. 11 at 7 p.m. in the Museum of the Rockies' Hager Auditorium. The lecture is free and open to the public, and will be followed by a reception at 8 p.m.

A native of New Zealand, Yeoman received his bachelor's degree and doctorate from Massey University in Palmerston North before moving to the United States. During post-doctoral research at the University of Illinois, he was recruited to help in a study examining microbes in the female reproductive system with a focus on the vagina. During that project, he realized progress would be improved by defining the chemical makeup of the system, which wasn't clearly understood. He began attempting to identify just what metabolites—molecules that play key roles in growth and bacterial regulation—characterized healthy and diseased systems and continued that work when he arrived at MSU in 2012.

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Once he better understood exactly what metabolites were present in the reproductive tract, Yeoman began working with collaborators in the College of Education, Health and Human Development exploring what roles they might play in disrupting health. Some of his data has connected skewed levels of some microbial metabolites and increased risks of HPV, chlamydia and other sexually transmitted infections.

“Some of the metabolites that we found we were able to link to certain signs and symptoms of bacterial vaginosis,” said Yeoman. “It’s a common disorder, but even today no one really knows what the etiology of it is. We’ve been trying to test the hypothesis that these metabolites are more than just signatures of the disorder but are also playing an important role in enhancing the risk of bacterial vaginosis and other diseases.”

Yeoman’s research has identified stress and smoking as some potential causes for increases in those metabolites, and he is working with a group of Alaska Native and American Indian women, for whom reproductive health is sacred but whose communities can sometimes see higher rates of sexually transmitted infections, to identify the underlying causes and potential solutions.

“We’ve made some strides, and that work is interesting,” said Yeoman. “The more I’ve learned about that system, both in terms of its unique microbial ecology and its biomedical significance, the more interested I have become.”

In non-human research, Yeoman’s focus is mostly on the productivity and health of ruminant animals such as sheep and cattle, but his expertise has helped illuminate potential improvements in cropland agriculture as well.

Last year, he was part of a team that discovered a previously unknown microbe inside wheat stem sawflies, insects which annually cause hundreds of millions of dollars in damage to wheat crops throughout the Rocky Mountain region. Research is now exploring whether those microbes can be a way to biologically control the sawflies, thus reducing the need for pesticides and other control methods.

Yeoman’s lecture will focus on the common themes of all of his projects, distilling the importance of microbes to health and productivity across species.

by Reagan Colyer, MSU News Service
MSU Photo by Adrian Sanchez-Gonzalez

Dr. Jeff Mosley Receives Impactful Outreach and Community Engagement Award

Dr. Sreekala Bajwa, Vice President, Dean, and Director of the College of Agriculture, selected our own Dr. Jeff Mosley to receive the 2020 Impactful Outreach and Community Engagement Award. She states, “This award recognizes those who have made an especially significant outreach and engagement contributions to benefit the many diverse communities and populations of Montana. He is being recognized for his 25 years addressing a myriad issues critical to Montana’s livestock sector, including grazing management, livestock interaction with fish and wildlife, rangeland monitoring, etc, for more than 70,000 participants. Your work has positively affected countless others in Montana’s livestock industry through conversations and consultations that lead to science-based solutions.”

ANRS Briefs

During the Stay at Home order, we had a limited number of staff still working in the Animal Biosciences Building. Everyone took turns braving the outside world to collect the mail for the building. Pictured is Dr. Bok Sowell, all geared up with PPE to make the journey to Culbertson Hall!

Ranch Manager JT Saunders and Peruvian herder Raul have been self isolating on the ranch at Red Bluff all winter and are happy to see some nice lambs. They probably haven't had contact with ten people all winter at the ranch and both are a little gun shy when someone new shows up. Like JT said, if you've ever lambed sick, you learn to take prevention serious.

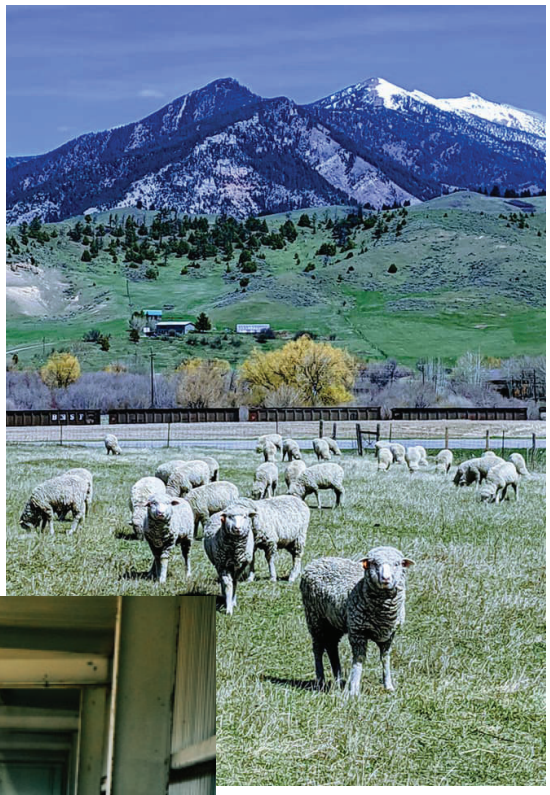
Update From Our Farms

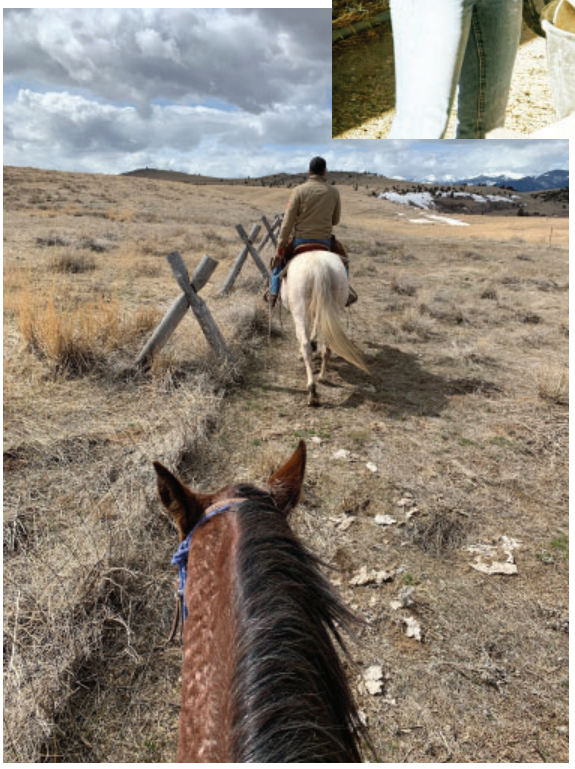
Despite having to adjust normal procedure this semester, agriculture goes on and we had lots of exciting occurrences going on at our farms. Our livestock manager Shay Larsen stated "We had our first set of new calves born this March that were conceived via Embryo transfer, as well as growing our registered angus herd that was started by donations from producers around the state." We also had some new faces join the team, Kellen Marlow is our new sheep foreman at Red Bluff Research Ranch, and Luka Mueller is our new town foreman at B.A.R.T. Even with campus being shut down and students studying remotely, there was no shortage of help as Madison Marks, Ashley Purcell, and Cole Morrison really stepped up the plate to keep our farms operating smoothly and effectively.

ANRS Briefs

Update From Our Farms

Update From Our Farms





MSU Colts Class Participates in University of Montana Western's Sale

This year the MSU Colt Starting Class was set to compete in the University of Montana Western's Colt Challenge and Sale. Unfortunately due to COVID-19, the challenge portion was cancelled, but the sale was moved to an online auction format. With the help of Rivers West Auction Service out of Arlee, MT a virtual audio stream was held to present the colts and bids could be placed via phone or online the day of the sale. Eight horses from MSU were sold, the highest selling colt was MS Playgun Shadow (donated by Darcy Dahl) going for $5,100. Kendall Fedore was awarded the "Top MSU Student" riding OSR Sparkling Gun (donated by Open Spear Ranch) who sold for $4,000. Thank you to all students and donators for participating in our Equine Program, great job this year!

Colt	Donor	Sale Price
Cosmos Breeze	Harrington and Hirschy Quarter Horses	$4200
Paddy Lena Starlight	Harrington and Hirschy Quarter Horses	$3500
Fuel On Sorrell	Harrington and Hirschy Quarter Horses	$4500
KR Splash	Kelly Reynolds	$3000
MS Playgun Shadow	Darcy Dahl	$5100
OSR Sparkling Sun	Open Spear Ranch	$4000
Ross Creek Breeze	Pat McReynolds	$3700
Ross Creek Silver	Pat McReynolds	$3800

Temple Grandin Speaks at Bair Ranch Foundation Seminar

Internationally recognized animal behavior researcher and autism spectrum disorder advocate Temple Grandin joined us for two lectures as part of the Bair Ranch Foundation Seminar series (http://animalrange.montana.edu/bairranchfoundation.html.) on Feb. 20. Interest in both lectures exceeded seating capacity with standing room only across two rooms for her technical seminar titled “Improving Cattle Stockmanship” at noon in the Animal Biosciences building and her community seminar “Understanding Animal Behavior and Autism” filling the almost 500 seat Ellen Theatre in the evening. Perhaps the most unfortunate part of her visit was having to turn away more than 100 folks from the free to the public event. Dr. Grandin is a professor at Colorado State University who pioneered innovative techniques for reducing stress in feedlot and processing operations. Her two talks focused on animal behavior during handling and transport, effective designs for stockyards and corrals, humane slaughter techniques and impacts of animal stress on meat quality as well as her own journey through life on the Autism Spectrum. As Dr. Grandin discussed, many important innovations, including modern stockyard and corral designs have been dependent on those who think a little differently. Dr. Grandin has been honored in Time magazine’s list of the 100 most influential people and her life portrayed in a self-titled film “Temple Grandin”. It was a great honor to have her join us here in Bozeman and those who attended were not disappointed.

by Dr. Carl Yeoman, pictures provided by Kelly Gorham

ANRS Briefs

Equine Program Makes Top 10 at MSU Giving Day

Our Equine Horsemanship program raised $7,075 from 20 different donors on MSU's Giving Day. This put them in the top 10 projects for most dollars raised campus wide. Good work you guys! The funds raised will go towards replacing older equipment and purchasing new gear to accommodate the growing number of students in our classes. This will be great for both our students and our horses!

Masters Candidate Receives Land Grant Excellence Award

Amanda Williams (second from far right) collects vegetation samples on the Matt Bliss Ranch to determine plant community recovery following wildfire.

Amanda Williams was awarded Montana State University's graduate award in Land Grant Excellence, at the reccomondation of our department. Amanda has made an impact on our communities and her work has helped many people and enhanced the Land Grant mission of Montana State University. In his reccomdation letter, Professor Clayton Marlow stated "A portion of the Montana Agricultural Experiment Station's mission statement is to "generate and disseminate superior knowledge and technological solutions …… [that will] improve the quality of life for all our citizens." In light of this mission, Ms. Amanda Williams would be an outstanding choice for the Land Grant Excellence Award because of her capacity to effectively transfer new knowledge to a broad spectrum of learners, stretching across communities of cattle producers, wildlife biologists, public land managers and federal/ state researchers. Even though she has well developed oral communication skills from her 4-H and FFA days, her successful outreach presentations hinge on her thoughtful tailoring of complex research outcomes to meet the information needs of her audience. Amanda has developed an instinctive feel for the knowledge a particular audience may need through active participation in commodity, leadership and professional organizations since she enrolled in Montana State University. This participation has enabled her to establish a network of learners throughout Montana agriculture and natural resource communities. Utilizing network contacts she can and has identified the issues and concerns that motivate listeners to pay closer attention to her message. It has taken some Extension Agents, research scientists and agency representatives decades to acquire the outreach education skills Amanda has already mastered. Her successful communication of new information has been highlighted through feedback to Dr. Vermeire, Rangeland Ecologist USDA ARS, and myself after presentations she made at the Montana Stockgrowers Association Annual Meeting in 2019 and this past month at the Annual Meeting of the Society for Range Management." Congratulations Amanda, we are so proud of you!

Undergraduate Students Perform at Society for Range Management

Our students performed very well at the SRM this spring. Ben Roeder participated in extemporaneous speaking, while Kara Novakovich, Justin Dahl, and Madison Gates were involved in the Rangeland Cup. Participating in URME was Haylee Barkley, Justin Dahl, Madison Gates, Nick Hurtz, James Kramer, Keegan Lancaster, Kara Novakovich, Cooper Schicke, Kyrsten Wolterstorff. Lastly we also had students Ben Roeder, Lara Macon, Kyrsten Wolterstorff, James Kramer, Nicholas Hurtz competing in Plant ID. Some of the highlights include: 5th place individual award in URME (James Kramer), 3rd place team award URME, 4th place team award Plant ID, 5th place individual combined award (James Kramer — combined Plant ID and URME score and placing in the top 20% in both contests). URME had 189 students participate from 24 universities. Plant ID had 170 students from 26 universities.

Dr. Marlow also had several students from his NRSM 490R class present a poster of their work from the class session this past fall semester. The students were: Kyrsten Wolterstorff, Hunter Hamel and Keegan Lancaster.

Congratulations to all of these students, you are a great representation of our whole department! If you see any of these students, please pass on a job well done!

Montana Nutrition Conference Moves to Online Format

The 2020 Montana Nutrition Conference and Livestock Forum (hosted by MSU Beef and Cattle Extension) was originally going to be held at the GranTree Inn in Bozeman, but due to Covid-19 was transitioned to an online format. This did not alter the success of the conference, as there were about 100 attendees for both days of the web meeting.

The first day of the nutrition conference featured Dr. Alison Van Eenannaam, from University of California-Davis. Dr. Van Eenannaam spoke on alternative meats and the statistics involved in developing their numbers for production. The second speaker was Sarah Baker from University of Idaho Extension. Sarah discussed meat qulaity and grading of carcasses, and also impacts to meat quality.

Day two of the conference featured four more speakers, the first being Dr. Max Hawkins from Alltech. Dr. Hawkins presented the importance of testing your forages for molds, mycotoxins, and ergot. He also discussed critical concentrations that could impact beef cattle production. Our own Dr. Carla Sanford (Extension Beef Cattle Specialist) followed with a discussion on nutrition impacts during gestation on offspring performance and growth. She specified the importance of considering fetal programming throughout gestation and not just the last 90 days. Race King of La Cense Montana, LLC then discussed the different technologies that they implement on the ranch and how they have been used to improve their cattle and their bottom line. Lastly Jim Robb from the Livestock Marketing Information Center spoke on the current state of the cattle market, with the addition of how Covid-19 may impact the livestock sector.

Steer-A-Year Program

Agriculture does not stop! This has been evident in the MSU steer-a-year program. Even in the midst of instruction being moved online and the many closures that took place the steers did not miss a beat. This is in thanks to the wonderful students and everyone at the Bozeman Agriculture Research and Teaching Farm. Graduate students Makae Nack and TJ Carlisle as well as undergraduate Makayla Paul took on the day-to-day care of the steers for the remainder of the semester and did a fantastic job. Although students were not on campus to see the steers on a daily basis, they still monitored the steer's progress. Through the steer-a-year class students kept track of intake, weight gain, and efficiency via 28-day weigh periods and grow safe technology. They also interpreted DNA results that were processed by Igenity – Neogene. Additionally, from a distance, students researched feedlot related management and health considerations, took part in the Montana Nutrition Conference, as well as cattle market webinars.

As we wrap up the semester steers will be making their way to harvest over the next few months. Steers will be processed at Pioneer Meats in Big Timber. The steers will be marketed to MSU Dining Services. As always, we would like to thank all the donors who make this program possible. We could not do it without you!

2020 Steer-a-Year Donors

Skattum Dairy and Ranch
Gary Adams
Butch and Doreen Gillespie
Dynneson Ranch
ARS – Fort Keogh
Plymale Ranch
Deseret Land and Livestock
Mark and Kristine Mahlen
Red Lodge Creek Ranch
Ferrat Ranch Limousin
Harrington Ranch
Mark Harrington
McRae Family
JD Vukonish
Rumney Ranch
Gateway Simmental
Northern Agricultural Research Center
Cowan and Son
Hearts Coulee Co.
Walborn Cattle Co.
Shadow Mountain Ranch
Bair Ranch Foundation
Triangle Land and Cattle
Koss Land and Cattle
Veseth Cattle Co.
Mike McCauley
EL Peterson Ranch
Bradley Livestock
Cooper Herefords
KG Ranch
Dearborn Ranch
Montana Ag Experiment Station

Graduation 2020

SPRING 2020

Graduate Students - PhD in Animal and Range Sciences

Jordan Hieber

Graduate Students - MS in Animal and Range Sciences

Jesse Bouffiou
Erika Nunlist
Amanda Williams

Prospective Undergraduate Students -B.S. in Animal Science

McKenna Anders
Trey Bloesser
Rachel Bonsall
Katherine Brownlow
Melissa Buettner
Andrew Couch
Emily Csenar
Chyna Drumm
Triston Edwards
Kearston Friedrich
Lindsay Gray
Austin Grazier
Nicholette Hilbrich
Sadee Hurst
Trase Johnson
Shaye Johnston
Keenan Kvamme
Emily Lawrence
Alexis Leary
Amanda Leckband
Kelly Liebers
Brandon Maher
Kelsey McCarty
Kassie Meccage
Georgia Newman-Taylor
Kelli Nicholson
Brianna Odell
Elizabeth Owens
Rachel Pavsek
Destiny Peickert
William Powell
Benjamin Roeder
Lindsey Tryon
Erin Verdoni
Brittant West
Shelby Wiggs
Jacqueline Williams
Samantha Yates

Prospective Undergraduate Students -B.S. in Natural Resources and Rangeland Ecology

Braden Carpenter
Mindy Dottellis
Margaret Epstein
Caitlin Gillespie
Justin Goodwin
Nicholas Hurtz
Krysten Wolterstorff

Prospective Undergraduate Students -B.S. in Sustainable Food & Bioengery - Sustainable Livestock Production

Mackenzie Knudson

Prospective Undergraduate Students -B.S. in Animal Science - Summer 2020

DaLayna Bravo
Mary Grace Donally
Olivia Hills

Graduation 2020

In order to keep everyone in our Bobcat Family safe, normal commencement ceremonies were cancelled. Instead a virtual ceremony was held, and all gradutes from this semester are also invited to walk at the fall commencement later this year. In addition their names will be included in the program, fall commencment is tentatively set for November 22nd. Spring 2020 graduates also recieved a "Commenement in a Box" that included a diploma cover, a unique tassel, and other suprises.

Outstanding Senior Awarded to Ben Roeder

Ben Roeder, son of Tracie and Brent Roeder of Choteau, was selected as the outstanding graduating senior in the Animal and Range Sciences Department. Ben was also a recipient of the Award of Excellence. Faculty in their college or department nominates students for the Award of Excellence. Qualified seniors must have at least a 3.5 grade point average on a 4.0 scale, as well as demonstrated campus leadership and community service. The honored students each select a mentor who will be recognized with them at the event. Ben nominated Jane Ann Boles. Dr. Boles had the privilege of serving as Ben's academic advisor.

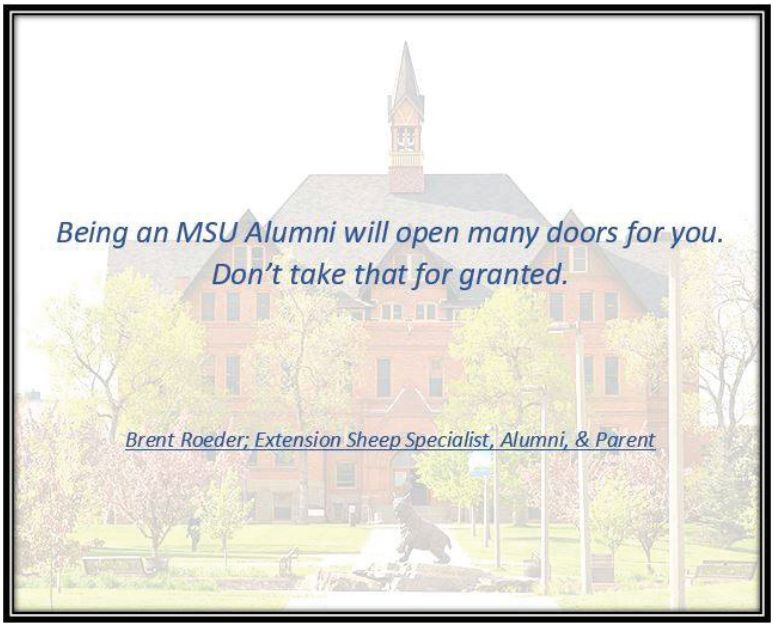
Ben has a thirst for knowledge that is contagious. His approach is to discover as much as he can about a subject not just do what is easy. One thing that stands out about Ben is his desire for new and challenging experiences, whether it is in class work or in other aspects of his education. Along with Ben's normal studies, he has participated in extracurricular activities through the Alpha Gamma Rho fraternity, Agriculture Student Council, ASMSU and the Range Club. He also participated in extemporaneous speaking and plant identification at the Society of Range Management meetings.

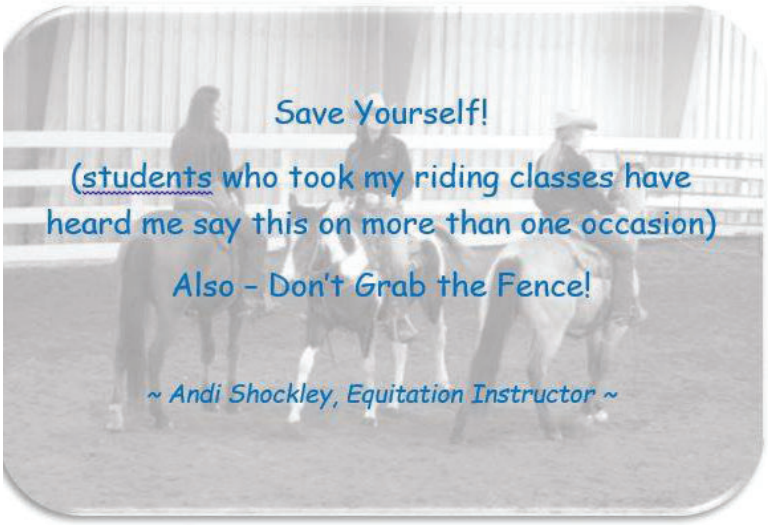
Congrats to Kearsten Friedrich, who won the College of Ag Mortar Board decorating contest. Kearsten graduated with a BS in Animal Science-Equine Science from our Department!

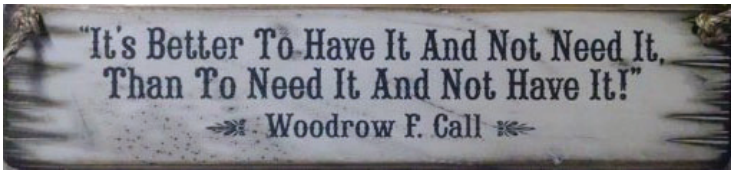
Ben Roeder, our 2020 outstanding senior

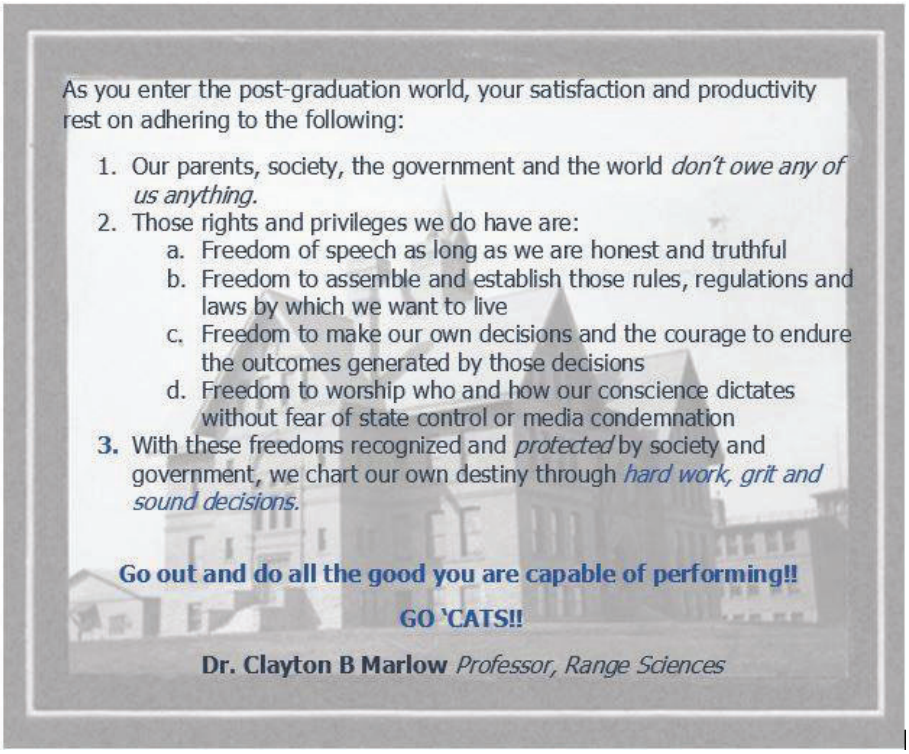
Graduation 2020

Gradvice grad·vice /grad'vīs/ (noun) graduation advice from Department of Animal & Range Sciences Faculty and Staff.









Publications and Presentations

Publications from Dr. Lance McNew and the Wildlife Habitat Ecology Lab:

Mosley, J., B. Roeder, R. Frost, S. Wells, L. McNew, and P. Clark. 2020. Mitigating human conflicts with livestock guardian dogs in extensive sheep grazing systems. Rangeland Ecology and Management, in press.

Pulliam, J.P. , S. Somershoe, M. Sather, and L.B. McNew. 2020. Habitat targets for imperiled grassland birds in northern mixed-grass prairies. Rangeland Ecology and Management, in press.

Milligan, M.C., L.I. Berkeley, and L.B. McNew. 2020. Effects of rangeland management on the nesting ecology of sharp-tailed grouse. Rangeland Ecology and Management 73:128–137.

Ritter, T.D., C. Gower, and L.B. McNew. 2020. Habitat conditions at beaver settlement sites: implications for beaver restoration projects. Restoration Ecology 28:196–205.

Ritter, T.D., and L.B. McNew. 2019. Age-mass relationships for beavers in Montana. Intermountain Journal of Sciences 25:1–10.

Vold, S.K. , L.I. Berkeley, and L.B. McNew. 2019. Effects of livestock grazing management on grassland birds in a northern mixed-grass prairie ecosystem. Rangeland Ecology and Management 72:933–945.

Wyffels, S.A., M. Petersen, J. Bowman, D. Boss, and L.B. McNew. 2019. Dormant season grazing of northern mixed grass prairies: the effect of supplementation strategies on heifer resource utilization and vegetation use. Rangeland Ecology and Management 72:878–887.

Milligan, M.C., and L.B. McNew. 2019. Effects of scavenging on assumptions of mortality analyses of radio-marked gamebirds. Northwestern Naturalist 100:197–205.

To see more from Dr. Lance McNew and his students, visit https://www.wildlifehabitatecologylab.com/research.html.

WILDLIFE HABITAT ECOLOGY LAB

Publications:

Borgogna JC, Shardell MD, Brotman RM, Yeoman CJ, Ghanem KG, Kadriu H, Ulanov AV, Gaydos CA, Hardick J, Robinson C, Ravel J, Bavoil PM, Tuddenham S. 2020. Vaginal metabolomics profiles: comparing uninfected, C. trachomatis mono- and C. trachomatis/M. genitalium co-infected women. Scientific Reports. 10: 3420 DOI: 10.1038/s41598-020-60179-z

Borgogna JC, Shardell MD, Santori EK, Nelson TM, Rath JM, Glover ED, Ravel J, Gravitt P, Yeoman CJ, Brotman RM. 2019. The vaginal metabolome and microbiota of cervical HPV-positive and HPV-negative women: a cross-sectional analysis. British Journal of Obstetrics & Gynecology. In press. DOI: 10.1111/1471-0528.15981

Fidel, J., P. O. Husby, and J.C. Mosley. 2020. Ecological health of grasslands and sagebrush steppe on the Northern Yellowstone Range. Society for Range Management Annual Meeting, Denver, CO.

Gomez A, Sharma A, Mallott E, Petrzelkova K, Robinson CJ, Yeoman CJ, Carbonero F, Pafco B, Rothman J, Ulanov A, Vlckova K, Amato KR, Schnorr S, Dominy N, Modry D, Todd A, Torralba M, Nelson KE, Burns M, Blekhman R, Remis M, Stumpf RM, Wilson BA, Gaskins HR, Garber P, White BA, Leigh SR. 2019. Plasticity in the human gut microbiome defies evolutionary constraints. mSphere 4: e00271-19 DOI: 10.1128/mSphere.00271-19

Publications and Presentations

Ishaq SL, Lachman MM, Wenner BA, Baeza A, Butler M, Gates E, Olivo S, Geddes JB, Hatfield P, Yeoman CJ. 2019. Pelleted-hay alfalfa feed increases sheep wether weight gain and rumen bacterial richness over loose-hay alfalfa feed. PLoS One 14: e0215797. DOI: 10.1371/journal.pone.0215797

Ishaq SL, Seipel T, Yeoman CJ, Menalled FD. 2020. Soil bacterial communities of wheat vary across the growing season and among dryland farming systems. Geoderma. 358: 113989

Sanglard LP, Schmitz-Esser S, Gray KA, Linhares DCL, Yeoman CJ, Dekkers JCM, Niederwerder MC, Serão NVL. 2019. Investigating the relationship between vaginal microbiota and host-genetics and their impact on immune response and farrowing traits in commercial gilts. Journal of Animal Breeding and Genetics. In press. DOI: 10.1111/jbg.12456

Sanglard LP, Schmitz-Esser S, Gray KA, Linhares DCL, Yeoman CJ, Dekkers JCM, Niederwerder MC, Serão NVL. 2020. Vaginal microbiota diverges in sows with low and high reproductive performance after porcine reproductive and respiratory syndrome vaccination. Scientific Reports. 10: 3046 DOI: 10.1038/s41598-020-59955-8

Yeoman CJ, Brutscher LM, Esen Ö, İbaoğlu F, Fowler C, Eren AM, Wanner K, Weaver DK. 2019. Genome-resolved insights into a novel Spiroplasma symbiont of the Wheat Stem Sawfly (Cephus cinctus). PeerJ 7:e7548 DOI: 10.7717/peerj.7548

Grants:

Carl Yeoman was awarded $68,000 by the Bair Ranch Foundation to investigate the capacity of microbes identified in the calf rumen whose presence corresponds to immune maturation for their ability to improve vaccination response.

Carl Yeoman was awarded $48,000 by the National Institutes of Health to continue his work to improve the reproductive health of American Indian and Alaska native women

Carl Yeoman was awarded $70,500 by the University of Maryland to explore the microbial and biochemical factors increasing the susceptibility of women to sexually transmitted infection.

Carl Yeoman was part of a team led by Mary Miles (Health and Human Development) that was awarded $160,000 / year for up to 3 years by the USDA to investigate the interplay between consumption of dietary pulses and gut microbes in ameliorating inflammation associated with obesity.

Carl Yeoman and Craig Carr were awarded $71,913 by the Bair Ranch Foundation to isolate gut bacteria from wild rumen samples capable of detoxifying larkspur and testing their ability to protect range cattle.

McNew, L.B., S. Somershoe, M. Sather, and K. Ellison. Fatal attraction for an imperiled songbird: is cropland in the northern Great Plains an ecological trap for McCown's longspurs? National Fish and Wildlife Foundation. $194,643. May 2020 – May 2023.

McNew, L.B. Suitability of grassland habitat for lesser prairie-chickens after restoration. Turner Enterprises, $91,418. July 2019–June 2022.

Awards, Honors, and Grants

Carl Yeoman was appointed as Editor of Nature's Scientific Reports journal.

Carl Yeoman was recently appointed as the Director of the Montana INBRE Bioinformatics and Biostatistics core.

Carl Yeoman was an invited speaker at the World Aquaculture Societies 2020 annual meeting in Honolulu, HI on February 10 presenting 'A Metagenomic Explooration of the Functional Potential of Gut Microbes Toward the Nutritive Capability of Rainbow Trout, Oncorhynchus mykiss'.

Carl Yeoman presented 'An important microbial community lives within us all' at the Provost's Distinguished Lecture series on February 11 at the Museum of the Rockies.

Jeff Mosley discussed the ecological health of the Northern Yellowstone Range during the Voices of Montana, a live statewide radio talk show.

Jeff Mosley presented a webinar entitled, "Grazing Behavior of Rangeland Cattle—Opportunities for Improved Management of Replacement Heifers and Young Cows".

Jeff Mosley was honored with the inaugural Impactful Outreach and Community Engagement Award from the MSU College of Agriculture and the Montana Agricultural Experiment Station. Congratulations Jeff on your 25 years (and counting) of significant and sustained achievement in outreach teaching across Montana.

You can connect with the Animal & Range Sciences department via a variety of social media sites based on your interests or needs. They are also great ways to keep up to date with our activities and current news. We encourage you to check out the options at http://animalrange.montana.edu/socialmedia.html and interact with us by posting a question or comment. We'd love to hear from you!

Hello

We would like for formally welcome **Dr. Jared Beaver** as our Wildlife Extension Specialist.

Laura Bratz started as a new member of our Admin Team.

Kellen Marlow began his new position as Red Bluff Sheep Foreman.

Luka Mueller started her position as Town Foreman.

Rodrigo Marques joins us as an Assistant Professor of Ruminant Nutrition.

Sarah Maninger began her new position as Wool Lab Manager.

Daniele Ruocco joins us as our new lab manager.

We are excited to welcome these new faculty and staff members! Congratulations and welcome to MSU and the Animal & Range Sciences Department!

We are looking for other news faces to join our department in 2020, so stayed tuned!

Goodbye

Ben Wheaton, Lab Manager, is moving to Sweden for a Postdoctoral Fellowship at Umeå University. Good luck, Ben!

Tyrell McClain left his position on the farm crew to work with Turner Enterprises in Nebraska.

Sharon Henderson, Admin Team, left to work across the street at the Department of Research Centers in Linfield Hall.

Visit our website at animalrange.montana.edu

Find us on Facebook at facebook.com/MSU.Animal.Range.Sciences

Email newsletter comments to laura.bratz1@montana.edu

Parting Shot

Photo by Brent Roeder, taken at Red Bluff. Take time to rest and enjoy the sunshine this summer!

The mission of the Animal and Range Sciences Department is to create, evaluate and communicate science-based knowledge to enhance the management of Montana's livestock and rangeland resources in ways that are economically, socially and ecologically sustainable.