



animal & range sciences newsletter

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Dr. Patrick Hatfield retires as Department Head

After eight years serving as Department Head to Animal and Range Sciences, Dr. Patrick Hatfield is retiring. We are proud of his service and commitment to MSU and are excited for his next chapter.

Patrick is a Montana native who began his career in Agriculture working on Montana and Wyoming ranches followed by service as an Ag Peace Corps volunteer in the Philippines on the Island of Bohol for two years. Following Peace Corps, he received a BS in Range Management from Montana State University (MSU), an MS in Range Science from New Mexico State University, and a PhD in Animal Science from the University of Nebraska-Lincoln. Upon completion of his PhD, Patrick started his career as a research scientist at the U.S. Sheep Experiment Station near Dubois, Idaho. After eight years at the sheep station, Patrick moved to MSU where he continued his research along with teaching four classes (Sheep Production, Grazing Livestock Production (later changed to Livestock in Sustainable Systems), Sheep Practicum, and a graduate course in Ruminant Nutrition) along with advising students. During his time as a faculty member, Pat worked with Dr. Ray Ansoategui to remove large unproductive labs associated with ANSC 100 and 222. They replaced them with the fully experimental learning sheep, equine, and beef practicum courses ANSC 232, 233, and 234. He served on numerous Department committees, served on the Department and College of Agriculture RTP committee, and was a USDA grant panel member and panel chair. Patrick's graduate nutrition courses had projects that were presented at the Nutrition Conference, Western Section, and published in peer reviewed journals. Since joining MSU in 1997, he secured more than \$7.5 million in extramural competitive funding. Patrick's publications include over 85 peer reviewed journal articles, 30 invited professional papers and presentations, over 100 proceedings and abstracts, and more than 50 popular press articles. In addition to research and teaching, he also developed a free, online sheep ration program that has over 2500 active accounts in more than 60 countries. Patrick served as Western Section American Society Animal Science (WSASAS) President in 2003 and was honored with the WSASAS Distinguished Service Award in 2013. In 2013 he was asked to serve as interim department head and in 2015 became the permanent head of the Animal and Range Sciences Department.



Pat and Fabian Menalled, LRES Exterminators.

In Patrick's first year as Interim Department Head in 2013 he lead the Department review, and then again in 2021. The review team remarked on much improvement in the Department during this time span. Also during Patrick's tenure as Department Head he pushed for, and oversaw, the return of livestock operations leadership from MAES back to the Department. He helped develop several new programs, including Sustainable Livestock Production, the Dan Scott Ranch Management Program, and the Livestock Pre-Veterinary option that is still in progress. He developed directions

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From the Interim Department Head

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It's my pleasure to welcome you to the latest edition of the Animal and Range Sciences biannual Newsletter. As you will see within these pages, despite the challenges we've all faced over the past year, our faculty, staff, and students have all gone above and beyond to make this another successful semester. While each person associated with our department has displayed incredible flexibility and commitment to our scholarship, teaching, and outreach and service missions, I can say on behalf of all, we are looking forward to getting back to normal operations come fall semester. One thing we will miss in the fall, however, will be our friend and leader of these last 8 years, Dr. Pat Hatfield, who we are wishing a fond farewell as he settles into a well-earned retirement after an impressive 25 years with the Department. Pat has guided this Department through a lot of change during his time as Department Head, with many new faculty, new administration, new programs like the Dan Scott Ranch Management program all being implemented during his tenure and his dedicated leadership has left this Department in great shape. As interim Department Head, I look forward to building on the foundations Pat and those before him have developed to ensure the Department continues to excel in fulfilling its academic mission while continuing to serve our communities and stakeholders to the benefit of all.



While saying farewell to Pat, we are also welcoming three new family members, including our latest faculty, Dr. Hayes Goosey who joins the Department as our Forage Extension Specialist, and two new foremen for our ranching operations, Danielle Duni who is taking care of our livestock operations at the Bozeman Agricultural Research & Teaching (BART) farm, and Wyatt Geis who, at the time of writing, is busy lambing in his role as our sheep foreman.

Among our successes this last semester, our administrative support staff, including Laura Bratz, Susan Cooper, Julie Hager, Dani Ruocco, and Denise Thompson were all individually nominated for Montana State University's Employee of the Year award. We are proud of this deserved recognition, and grateful for the excellent service each of our administrative staff provide this department. Dani Ruocco, our laboratory manager deservedly won the award for her contributions to safety. This was in recognition of both her role in managing the research laboratories and her service to MSU COVID testing lab where she played an integral role in the University's effort to support our communities through testing more than 190,000 samples.

Another notable success this semester was the awarding of our own Hannah DelCurto-Wyffels with the Western Region Award for Excellence in College and University Teaching in the Food and Agricultural Sciences. Since joining the Department in 2014, Hannah has developed and taught seven new courses to almost 2,500 students, along with advising our collegiate stockgrowers club, and running our steer-a-year program.

There are a number of research and scholarship achievements detailed within, including new grants and publications. Dr. Rodrigo Marques' paper on the effects of feed additives in cattle fed forage-based diets was featured on the cover of the Journal of Animal Science exemplifying the excellent research coming out of the Department which is both locally focused and of National significance.

Finally, we are wishing 50 new graduates and 7 post-graduate students the best of luck as they graduate from our program and take on the next part of their exciting life and career journeys.

Enjoy the summer, and pray for rain!

Dr. Carl Yeoman
Interim Department Head

A handwritten signature in black ink, appearing to read 'C. Yeoman'.

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Pat and Devon Ragen medicating a sheep.

for our faculty on how to use Activity Insight, and that document later became the base for directions for all university faculty using Activity Insight. Patrick sat on several University committees and working groups including the University new Role and Scope Document, University Work Load Policy, and University Doctoral Prioritization. He hired 13 tenure track faculty members, worked to successfully fill 10 positions made vacant by retirement and resignation, and hired five full time non tenure track and professional teaching faculty. Patrick made many improvements in Livestock Operations, including restructuring the Livestock Operations crew to increase operating dollars and reduce fulltime positions to better fit needs, investigate and develop a proposal to shift calving from February to May which was implemented in 2020, worked towards the removal of the feed mill, and it looks like the removal may be funded through LRBP this year.

Dr. Carla Sanford, Extension Beef Cattle Specialist, recounted an exciting memory with Patrick on her first summer on the job.

“Dr. Hatfield and I had a memorable experience my first summer on the job when we attended the 2019 Ag Lenders Range School in Dupuyer, Montana. It is customary to camp out at those events and so we all came prepared for a fun filled adventure of learning, grilling steaks and conversing with Extension faculty and students, ag lenders from the state and the great folks that put together the event year after year. One problem though...there was a large grizzly bear that was spotted just down the road on the same ranch feeding on a cattle carcass and the campsite was positioned in a thick brush area just great for bear denning. Needless to say we all slept in our vehicles! Leave it to Dr. Hatfield to really show the new faculty the Animal and the Range of Montana!”

Interim Department Head Dr. Carl Yeoman also reflected on his early experiences working with Patrick.

“I can still remember Pat’s engaging smile when I interviewed and his willingness to take me under his wing. He provided me a lot of advice and guidance as an early faculty member (even before I officially started) and the first class I taught was co-teaching our Advanced Ruminant Nutrition class with Pat, where I was enamored with his teaching style and willingness to work with me to develop mine. Although not necessarily the best advice Pat ever gave me, the most memorable was during his first stint as Interim Department Head when I was having some good fortune with grants and papers and was generally doing well and during my performance review, he told me I needed to step back, relax more, and go to the gym daily. It wasn’t the feedback I was expecting, but it did foster an obsession with a daily gym routine.”

Patrick describes his biggest accomplishments while serving as Department Head to be his service to the Department and Livestock Operations faculty, staff, and program mission. In addition, he is particularly proud of his research incorporating livestock into crop farming systems, and working with the foundation to fund the Dan Scott Ranch Management Program, as well as develop the program and shepherd it through the review process.

On behalf of the whole department, we want to thank Patrick for his leadership over the past eight years. He has been a tremendous asset to Animal and Range Sciences and will be missed. Happy Retirement Pat!



Pat biking on Beartooth Pass. Hopefully retirement allows for many more biking trips!

Hannah DelCurto-Wyffels recognized for excellence in teaching

An animal science instructor in Montana State University's College of Agriculture was recognized earlier this month for her excellence in student engagement and teaching.

Hannah DelCurto-Wyffels, who teaches eight courses in MSU's Department of Animal and Range Sciences, received the Western Region Award for Excellence in College and University Teaching in the Food and Agricultural Sciences. She was nominated alongside faculty from land grant universities across the western half of the U.S. in the Teaching and Student Engagement Category.

DelCurto-Wyffels has developed and taught seven new courses to nearly 2,500 students across a variety of diverse majors since joining the MSU faculty in 2014. In addition to teaching courses such as Introduction to Animal Science and Livestock Evaluation, she advises MSU's Collegiate Stockgrowers Club and the Steer-A-Year Program, in which students learn about and manage the care of cattle donated by Montana producers. Those steers are then sold to MSU's Culinary Services, a partnership that helped MSU earn a national sustainability award for the integration of local ingredients into the campus dining halls.



Hannah Delcurto-Wyffels receiving the Teaching Innovation Award from Dean Bajwa in 2020.

"In education, it is easy to get caught in a standard way of how things should be and what a typical college course should 'look' like," said DelCurto-Wyffels of her teaching philosophy. "However, diverse student populations respond to diverse educational experiences and teaching approaches. As an educator, it is my job to help individuals discover their unique talents and foster ways to develop and promote knowledge that is effective for multiple learning styles."

In addition to teaching several animal science courses each semester, DelCurto-Wyffels is also furthering her own education and is set to complete her doctorate in beef cattle nutrition through the Department of Animal and Range Sciences this fall. She also serves as the department's internship coordinator and advises a number of graduate students.

"Hannah has continually gone above and beyond to provide her students with opportunities that assist them in becoming successful in their future careers in the agriculture industry, myself included," said Marley Manoukian, a current MSU master's student who took a number of undergraduate courses taught by DelCurto-Wyffels. "During my time in graduate school, she has continued to be a great mentor and is always willing to hear my questions and provide her expertise regarding both research and teaching. There is no one more deserving of this award."

The award will be presented at the Western Joint Summer Meeting, which will bring together agricultural faculty and staff from institutions across the western U.S. in a virtual format in June, hosted by the University of California Division

of Agriculture and Natural Resources. DelCurto-Wyffels, who also received MSU's Teaching Innovation Award earlier this year, has been invited to speak at the meeting about her teaching philosophy.

"Soon-to-be Dr. DelCurto-Wyffels is our department's foundation for undergraduate education," said Patrick Hatfield, head of the Department of Animal and Range Sciences. "Her dedication and passion for student learning and animal agriculture make her one of Montana's and Montana State University's greatest animal agriculture learning resources."

Reagan Coyler, MSU News



Things to think about when considering livestock pest control options

Pest control may not be on the mind of all producers right now as temperatures across the region hover well below zero, but with several control methods out there, prior planning is never a bad idea.

Dr. Megan Van Emon, Montana State University Extension beef cattle specialist, says this time of year lice can actually be a common problem in cattle. She explained there are two different kinds of lice that affect cattle: biting and sucking. Biting lice feed off of the skin and hair follicles of a cow, while the sucking lice consume blood. Lousy cattle will have patches of hair missing and they will constantly be itching and rubbing up against infrastructure like fences and buildings.

Severe lice infestations can lead to skin infections and even anemia, but most commonly, lice are just pesky annoyance to cattle with the greatest economic loss found in facilities damaged from cows constantly rubbing on them.

If a producer is dealing with lousy cattle right now, Van Emon says the root of the problem could possibly be traced back to the fall, when a pour-on insecticide would have been applied.

"Most pour-on products are rated for two applications, two weeks apart. The problem is, the first application will kill the adult lice but it will not kill the eggs. So if the female lice have laid any eggs on those cattle, they are going to hatch," Van Emon pointed out.

When applying pour-on to cattle in the fall, Van Emon highly recommends reading the label to see if the product kills lice eggs. If it doesn't, it is most likely the product will recommend a second round of application.

If a producer wants to use a lice-specific product like Clean-Up II, Van Emon says it is best to not apply it until after cattle actually begin to show signs of a lice infestation.

Looking ahead to spring and summer, producers often hem and haw the use and ultimate effectiveness of fly tags, a common pest control method. Fly tags began being used in the industry back in the 1980s, and therefore, most product research is from that time, but Van Emon was able to find a study from two years ago that looked at just how effective fly tags actually are.

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Citing the study, Van Emon said, cows with fly tags gained more weight over the summer than the cows who didn't have fly tags. Arguably more important to producers in this area, however, the study also found the calves of fly-tagged cows weighed 35 pounds heavier at weaning.

"It makes sense when you stop to think about it. Cattle start to show defensive behaviors when fighting flies. They will bunch up, kick at their bellies and they are constantly licking and moving around which prevents that calf from nursing as much," Van Emon pointed out.

No matter if you choose to use pour-ons, fly tags or any other form of pest deterrent, Van Emon says it is imperative to use a product with a different active ingredient every year. This drastically reduces product resistance.

Van Emon has come to notice that garlic, commonly mixed in with a mineral supplement, has become a popular and natural insect repellent in pasture cattle. She knows of several producers in the area who have had great success with garlic, but so far, published studies testing the true effectiveness of garlic in fly control is sparse.

Further, a recent first-hand encounter may indicate that garlic, which is prized for producing a sulfur-based odor that ultimately deters flies, could compound with sulfates commonly found in Eastern Montana water sources, creating problems.

Van Emon had a couple producers approach her last summer as they were having issues with sulfate toxicity in their herd. The producers knew their water source was high in sulfates, but not at the level to be considered toxic, so they were puzzled.

"The only conclusion we could come up with is they were feeding a garlic product in their mineral for fly control," Van Emon said.

The connection between garlic and sulfate-laden water is inconclusive at this exact moment, but Van Emon says this experience may clue other producers who know they have higher sulfates in their water to be mindful of using garlic for fly control.

As a beef Extension specialist, Van Emon is dedicated to doing research and finding answers that are most pertinent to Montana's ranchers. Because of that, she is looking into doing further research on the use of garlic for fly control.

There are several different pest and lice control methods out there, ranging in cost. Van Emon's takeaway message is to always read and follow product labels. By taking notes of things like application rates and withdrawal times, a producer is more likely to bolster a product's efficiency.

Morgan Rose, The Prairie Star



In the News

Spring lambs born at MSU's Red Bluff Research Ranch

BOZEMAN — Throughout a Montana spring, baby livestock become a welcome feature on the landscape, with both wild and domestic newborns appearing across the state. For the staff at MSU's Red Bluff Research Ranch near Norris, the arrival of springtime means preparing for several hundred new lambs.

Red Bluff, which covers nearly 11,000 acres between Norris and the Madison River, is staffed by ranch foreman Noah Davis, sheep foreman Wyatt Geis and shepherd Raul Franco-Urcos. All three live on the property, which proves useful when the time comes for lambing. Nearly 700 lambs are born over five weeks each spring.



Ewe and lamb staying warm in the lambing barn.

"Usually, we get about a 130% lamb crop," said Davis. "We have sets of twins and triplets as well as single lambs, depending largely on the genetics of the sheep."

With just under 600 sheep living permanently at Red Bluff, lambing becomes hectic after the first lambs are born in the beginning of April each year. One of the three men gets up hourly through the night to check the pastured herd for new lambs and ensure any new babies don't get too cold.

Red Bluff's sheep facility includes two dedicated barns for ewes and their lambs after birth. The ranch also houses around 200 head of cattle, which began calving in early May. The facility is used for both teaching and research, constituting the hub of MSU's agricultural sheep research, spearheaded by Brent Roeder of the College of Agriculture's Department of Animal and Range Sciences and an MSU Extension Specialist.

here. What does it mean for the diet of the animals if you graze sheep before cows, or vice versa, or at different times of the year? There's a broad array of topics you can look into."

In addition to leading research efforts, Roeder has published work on the effectiveness of livestock guardian dogs, which are becoming more common with ranchers to mitigate conflicts between livestock and wildlife. Red Bluff also has two new guard dog puppies, large mixes of Kangal and Turkish Boz who were trained by guard dog specialist Steve Skelton, a rancher near Choteau who has used the dogs successfully in grizzly bear country for several years.

But in April, lambing is the No. 1 priority at Red Bluff. The process starts in November, with either artificial insemination or with rams turned out with the 450 ewes of breeding age for around 45 days. The other 150 sheep are known as ewe lambs, yearlings who aren't yet old



Wyatt Geis clamping an umbilical chord on a fresh lamb.

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enough to be bred and kept separate until they turn two years old.

After those 45 days, the rams are then removed to MSU's Fort Ellis Farm in Bozeman, said Davis. The sheep gestation period of around five months leads to the extremely busy lambing weeks for Davis, Geis and Franco-Urcos. As lambs are born, they are taken with their mothers into Red Bluff's lambing barn, where they are kept in pens known as jugs. The smaller, more private space gives mother and lamb an opportunity to bond and for the lambs to begin nursing. Most lambs are on their feet and walking within about 15 minutes of birth, said Geis.

"They'll be in the jugs for between 12 and 24 hours," said Geis. "We dock their tails and tag their ears not long after they're born and record all the information about size and weight and whether we had to assist with the birth or not."

After their time in pairs in the lambing barn, the ewes and lambs are moved into the mixing barn, where they are gradually exposed to larger groups of sheep to give the lambs the opportunity to practice finding and following their mothers. After several days in the mixing barn, they move into pastures and finally onto Red Bluff's rangeland acres. When the next spring arrives, the entire herd will be sheared and a sample of each fleece taken to MSU's Wool Lab — one of just a pair of labs of its kind in the nation — to continue ongoing research in wool quality and the variables that influence it.

By the time that shearing takes place, this year's lambs will be yearlings and almost ready for breeding themselves.

"Then the process starts all over again," said Davis.

Reagan Coyler, MSU News



Noah Davis shepherding sheep to a new pasture at Red Bluff.

Funding for new Montana Wool Lab approved

Montana House Bill 14 was signed into law in early May by Governor Greg Gianforte in a ceremony at the University of Montana. This signing was a huge win for Montana's sheep producers, securing 5 million dollars of funding to build a new Wool Lab on Montana State University's Bozeman campus. The remaining 1 million dollars for the project will be collected through fundraising efforts. The Montana Wool Lab is one of many projects funded through HB14.

The current Montana Wool Lab building sits on the north end of Bozeman's campus on South 11th Avenue. The Montana Legislature approved funding to build the structure in 1945, with the completion of the current building in 1947. The Montana Wool Lab is a research-oriented lab, serving sheep and wool producers. Research and testing provided allows sheep producers to enhance the genetics of their flock by improving wool traits. It is an integral part of sheep and wool research on campus, Extension outreach, and teaching. The Montana Wool Lab is one of just a handful of wool testing labs left in the United States, processing nearly 15,000 samples per year from across the USA. This bill will allow for the Wool Lab to upgrade facilities and equipment, to provide more services and allow space for collaboration on research.


Unlike polyester and much of the clothing produced today, wool is a renewable, sustainable, biodegradable fiber. Sheep across Montana are shorn typically once per year, and the wool is then sold to be cleaned and turned into many different items. Different breeds of sheep grow wool with various qualities, making it useful for: coats, socks, blankets, insulation, suits, and a host of other products. This investment in a new wool lab at MSU is a step forward in securing updated facilities to provide wool testing for sheep ranchers and research to continue to find additional uses for wool.

Western Ag Network, Montana Wool Growers Association



Introducing Dr. Carl Yeoman, Interim Department Head

Dr. Carl J. Yeoman joined the Department of Animal and Range Sciences in 2012 as a molecular microbiologist. During the past 8 1/2 years, his research program has drawn strong funding from both the United States Department of Agriculture and the National Institutes of Health. Carl's research focuses on host-associated microbial communities, including those associated with various agriculturally-important livestock species. In recent years these have included significant contributions to understanding the maternal transmission of important microbes to cattle and sheep, how interactions among gut microbes contribute to animal health and productivity, as well as uncovering a previously unknown microbial symbiont of the insect pest, wheat stem sawfly, which his group is pursuing as a means for a novel approach for biocontrol. In addition to his strong research program, Carl has consistently demonstrated excellence in teaching. He has served the Department through multiple university, regional, and national service commitments, including regular service on both USDA and NIH grant review panels, editorial roles for three prominent journals, and leading the Bair Ranch Foundation Seminar series' efforts to bring together faculty, students, and stakeholders around cutting edge research developments. In recent years, Carl has played leadership roles in faculty senate and research council, along with leading the focus group that developed the College of Agriculture's research priorities during the development of the Strategic Plan. We are looking forward to Carl leading our Department during this interim period.



MSU Range Club participates at 2021 SRM competition

The MSU Range Club participated in the 2021 Society for Range Management student competitions, held in conjunction with the virtual SRM events this year. We had students compete in both Plant ID and the Undergraduate Range Management Exam (URME). The plant ID test took place in real time but virtually using a camera to show the individual mounts and diagnostic characteristics – definitely a challenging approach to this time-honored tradition. The plant test was graded, however the top five student and team awards were not presented because of inequalities in student preparation associated with differences in campus responses to COVID-19 (i.e., some schools had access to study mounts while others did not). Haylee Barkley, Jean Blackman, James Kramer, and Caroline Roeder competed in the Plant ID test. The URME test was completed at each home campus and for our students took place on a Saturday morning under the watchful eye of Merrita Fraker-Marble. Haylee Barkley, Jean Blackman, Justin Dahl, Madison Gates, James Kramer, Kara Novakovich, and Cole Stumpf competed in the URME contest. URME awards were given out and our students, once again, represented MSU well. James Kramer won 2nd place individual, Haylee Barkley won 5th place individual, and MSU was awarded the 2nd place team award. There were 77 students from schools across the west who competed in the URME contest. A combined score award for students who do well in both Plant ID and URME was also awarded and our James Kramer won the 2nd place individual combined award. The plant ID team is coached by Craig Carr and the URME team is coached by Merrita Fraker-Marble. Congratulations to the Range Club!

Partnering for Safety Training

Students from the Dan Scott Ranch Management Program, the staff of MSU BART Farm and Red Bluff Research Ranch, and interns with the Working Lands Internship Program through MT Department of Natural Resources and Conservation (DNRC) came together at BART for a primer in agriculture safety.

“It does not matter how much or how little ranch-related experience you have, safety should always be the first concern”, says Rachel Frost, program lead of DSRMP. “This was a great opportunity to join forces with other internship program in the state and conduct one comprehensive training program for everyone.”

As interns, these students will be working on a variety of ranch and farm related tasks and often using the operation’s equipment and facilities. The training was designed as a safety refresher for students and a reminder to not be



Austin Grazer asks for questions after demonstrating safe saddling and lunging techniques to use around unfamiliar horses.



Austin Grazer holds a straw filled shirt over a spinning PTO preparing for a demonstration of the dangers of certain farm equipment.

reluctant to ask questions in unfamiliar situations. Austin Grazer, with the Montana Agriculture Safety Program, led the training off with some statistics on the frequency and cost of farm injuries. He then demonstrated safe operating techniques for tractors, UTVs and the most unpredictable farm or ranch machine, the horse. Austin and Kellen Marlow, Livestock Operations Manager for MSU, then walked students through safe handling procedures for livestock in the working facilities.

The most popular, and sobering, demonstration of the day was when Austin and Kellen demonstrated the power of a tractor PTO by entangling a hapless dummy made of straw and a Goodwill shirt. The explosion of straw and destruction of the shirt was a harmless reminder of the dangers inherent in agriculture and the need to maintain vigilance.

The students arrive at their internship hosts the first week of May for a summer of experiential learning.

Developing the Young Horse class under new instruction

This spring semester the Developing the Young Horse class was offered by instructor Amy Prechter at Miller Pavillion, with a different twist. This “Developing the Young Horse” course focused on teaching the student the art of horsemanship, how to develop a soft feel with a horse, and to further advance both the student and horses experience/training. Unlike previous courses, all of the horses in the class had been started under saddle prior to the semester, so students were able to learn about the training process involved in developing a young green horse. Typically this course is a two semester course starting with colt starting methods in the fall and wrapping up with developing the young horse in the spring. 11 students and horses successfully completed the course, finishing with a walk/jog cowboy dressage pattern.

We will be offering a colt starting/green horses class in the upcoming fall and spring semesters. If you would like to donate a horse to be used in the class, please contact Amy at cedarridgeequines@gmail.com or 406-282-3355.



Amy working with Keegan (student) and his horse Brandy.



Local trainer Jon Ensign came in as a guest instructor to give students some extra training techniques.



Dr. Dom Eickert (DVM, All West Veterinary) giving students a hands on lesson in dental exams.



*Jolee (student) and her horse Steel in their semester final.
Photo by Brooks Photography.*

Farrier School back in session



From left to right: Grace Lohrmann, Ashley Anderson, Lindsay Koch, Diego Almeida, Willy Lytton, Jason Colcough, Travis Blecha, and Owen Britton.

Under the new leadership of Farrier School Director Diego Almeida, 7 students received their certificates from the most recent Spring Session. The course focused on anatomy and physiology, key concepts of biomechanics, trimming and forging techniques, and specialized forging and shoe making. The class also worked closely with Andi Shockley, Amanda Bradbery, and Tami Parrott's Equine Science courses in order to give both the farrier students and Equine Science students a broader and more comprehensive education. Ashley Anderson, Travis Blecha, Owen Britton, Jason Colcough, Lindsay Koch, Grace Lohrmann, and Willy Lytton were all fantastic students and we wish them the best moving forward with their careers. There will be no Summer Session in 2021, the school is closed for facilities updates. The next session will begin in August with new concrete floors in the shop. If you are interested in having your horses shod for a discounted rate by students, contact Diego at diego.almeida@montana.edu or 708-297-7620.

MSU Extension Ranching Systems Team launches first tour



With much of Montana experiencing moderate to severe drought, the MSU Extension Ranching Systems Team hit the road to meet with producers. In person drought management workshops were held in late April and early May in Sidney, Miles City, Havre, Lewistown, and Dillon. The Sidney workshop was also delivered virtually. The MSU Extension Ranching Systems Team was formed in 2020 with the recognition that ranching is a complex endeavor, where decisions in one area can and do affect other areas of the business. The mission of the Team is to “provide comprehensive and collaborative interdisciplinary programming on issues important to the ranching community and stakeholders including,

but not limited to animal nutrition, reproduction, and management, land management, environmental stewardship, grazing systems, livestock-wildlife interactions, ranch economics, pest management, biosecurity, employee leadership and alternative markets.” To learn more about future programming and the team members visit: <http://animalrange.montana.edu/extension/ranchingsystemsteam.html>

The first official program effort of this group launched the last week of April featuring Hayes Goosey- Extension Forage Specialist, Jeff Mosley- Extension Range Management Specialist, Megan Van Emon and Carla Sanford- Extension Beef Cattle Specialists. Rachel Frost, Dan Scott Ranch Management Program Lead, and other members of the Ranching Systems team also gave an overview of the Ranching Systems Degree with Animal and Range Sciences, and how ranchers in the state can be a part of the program by hosting interns or contributing to the program in other ways.

Workshop topics included grazing management drought, the dangers of poisonous plants and nitrate concentrations, annual forage crop alternatives, and water quality concerns, as well as reproductive and nutritional strategies to maintain livestock production during times of forage shortage. Collectively, the presenters outlined a management strategy to sustain ranches through a drought and identified triggers for more severe action such as livestock sales. The importance of recognizing and responding to drought early was emphasized, along with having a plan in place in advance to avoid the necessity of making difficult decisions in stressful times.

Thankfully, parts of Montana recently received much-needed precipitation, however, drought is an all too common occurrence in the West and the trophy of survival goes to the ones who prepare. If you were unable to attend in person please visit <https://animalrangeextension.montana.edu/ranchcats/2021droughtrecordings.html> to view the recording of the Sidney workshop.



Lab Manager Daniele Ruocco wins Employee of the Year in Safety

There were 47 nominees for the Excellence in Service & MSU Employees of the Year Awards. Five of these nominations were for Animal and Range Sciences staff members. Laura Bratz, Susan Cooper, Julie Hager, Daniele Ruocco, and Denise Thompson all received individual nominations. Dani was given the honor of being chosen for the Safety Excellence Standard. Dani demonstrates extraordinary commitment to MSU and the general public. She is very organized and is a valuable resource for faculty and students as they navigate procedures in the labs. Dani is helpful, caring, resourceful, and happy to offer assistance. Her attention to detail and dedication to work is an invaluable asset to our department. Dani served on the COVID-19 lab, using her 12 years of experience of hospital procedures to facilitate the development of a safe onboarding process for test samples from across Montana. Congratulations to Dani, and to the other nominees. They have proven their dedication to MSU in countless ways and are deserving of recognition. Way to go Dani!



Daniele Ruocco, Lab Manager

Masters student Makayla Ogg participates in International Livestock Congress

Makayla Ogg is a master's student working with Dr. Carla Sanford in the Animal and Range Sciences Department focusing on reproductive physiology. In March, she was selected as one of 16 other students from across the globe,



Makayla Ogg, Graduate Student

to be a participant in the virtual 2021 International Livestock Congress (ILC). The ILC is a three-day conference covering topics of importance in the beef industry, the topic for the 2021 conference was the "Pandemic Induced Adjustments in the Beef Industry". Participants of the conference listened to industry leaders from multiple sectors of the industry, from the restaurant, hotel, and grocery stores to the packing industry, and producers. Leaders from the hotel and restaurant sectors, and grocery stores discussed how they have handled the impacts of COVID-19 when the pandemic initially began back in March of 2020, and how they adapted quickly to meet consumer demands while keeping shelves full. While the packing industry leaders discussed the importance of closing the gap between the packer and producer, in addition to addressing the gap between consumers and producers. Producers discussed the importance

of being sustainable and building trust with consumers that are interested in knowing exactly what type of quality and practices that producers use on their operations. The 2021 International Livestock Conference brought together a group of industry leaders from across the globe to discuss the impacts of COVID-19, advancements in the technology, sustainability, and closing the consumer and producer gap.

Thank You!

2020-2021 SAY Donors

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Prickly Pear Simmental

Hahn Ranch

Hay Camp Ranch

Plymale Ranch

Butch and Doreen Gillespie



**S
Y**



At the Beginning of this month the first group of calves were branded at Red Bluff Research Ranch near Norris, MT. This group of 30 calves were born from embryos donated by some of the top registered black Angus producers across the state of Montana. After going through an entire production cycle and selling the first crop of purebred bulls this spring, these calves will aid in the continual growth of Montana State University's own registered black Angus program. The Angus Program has been a group effort with help and oversight provided from our own incredible faculty members, outstanding graduate students, and a multitude of cattle industry professionals to assist with the process.

This is also the first year that the main cow herd will begin calving in the month of May. The shift from the traditional February-March calving took place to aid in the development of efficient, range-based cow herd that relies less on harvested forages and gives more flexibility in grazing management at our three research and teaching facilities within the area. Calves will be retained over winter and will be marketed and sold as yearlings while being grazed year-round within the operation. We are excited with this transition for the betterment of our cattle herd and look forward to the opportunity to produce research and information that directly benefits Montana producers.





Spring 2021

Graduate Students - MS in Animal and Range Sciences

Trestin Benson
Jesse Bouffiau
Josh Hanson

Marley Manoukian
Tyrell McClain
Madison Schumacher

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

Lauren Arnst
Sean Baird
Haylee Barkley
Madison Gates
James Kramer

Keegan Lancaster
Collin Logoyda
Kasydi Lucas
Garet Marchington
Tristan Morgan
Kara Noveakovich

Mason Nussbaum
Miranda Protzen
Emma Steele
Benjamin Stoffer
Tessa Wilson

Prospective Undergraduate Students -B.S. in Animal Science

Daniel Bock
Rachel Brennan
Ally Bummer
Courtney Cass
Weston Cassens
Caden Colombik
Justin Dahl
Rebecca Eckberg
Grace Gauthier
Hannah Green

Savanna Grubbs
Nicole Halfpop
Lainee Hill
Jessica Horan
Jenelle Klingaman
Kari Koss
Jamie Kruger
Samuel Kruppenbacher
Kensington Lang
Kyler Maharg
Madison Marks

Shelby Monsaas
Wyatt Phillips
Abby Reidle
Michael Shenk
Jacob Swope
Tyler Thorson
Kyle Topp
Sydney Watt
Francesca Welter
Zava Zupan

Prospective Summer 2021 Graduates- Animal Science

Daniela Alambarrio

Megan Taylor

Congratulations to all the graduates!



James Kramer named 2021 Outstanding Graduating Senior

We are pleased to announce James Kramer as our 2021 Outstanding Graduating Senior. James graduates with a BS degree in Natural Resources and Rangeland Ecology and also a minor in Animal Science.

He has excelled as a student, graduating with a 3.98 cumulative GPA. He has been on the President's List 6 semesters and Dean's List 7 semesters (spring semester excluded).

James also represented the department and Montana State University at the annual, professional Society for Range Meeting (SRM) each year, competing in both the comprehensive, Undergraduate Range Management Exam (URME) contest AND the Plant Identification contest. Each year, more than 120 students representing 12+ universities from the U.S., Canada and Mexico compete in each contest. As a sophomore, James placed 5th highest individual in the URME contest. In 2020, James placed 5th highest individual for combined Plant ID and URME scores. In 2021, he placed second highest individual for combined Plant ID and URME scores.



*James Kramer, 2021
Outstanding Senior*

James has also excelled outside of academics. In the past, James has been an herbicide applicator for a large ranch in Southwestern Montana, using his plant ID skills to identify noxious weeds. James has worked for the BLM on range improvement projects including: building and maintaining fences on boundaries and around impacted riparian areas, developing springs, and installing stock tanks. He has also served as a range technician for the BLM, collecting rangeland monitoring data.

James is past Treasurer and current President of MSU's Range Management Club. He is also an active member of the Alpha Gamma Rho fraternity Alpha Delta chapter, where he was the Alumni Relations Chair in 2020.

Voting for the Outstanding Graduating Senior was very tough this year, as we had several excellent candidates. Congratulations to all of our seniors for your excellent work! Congratulations, James, on all of your accomplishments.



Publications:

DelCurto-Wyffels, H. M., Dafoe, J. M., **Parsons, C. T.**, Boss, D. L., **DelCurto, T.**, **Wyffels, S. A.**, ... & Bowman, J. G. (2021). Corn versus Barley in Finishing Diets: Effect on Steer Performance and Feeding Behavior. *Animals*, 11(4), 935.

DelCurto-Wyffels, H. M., Dafoe, J. M., **Parsons, C. T.**, Boss, D. L., **DelCurto, T.**, **Wyffels, S. A.**, ... & Bowman, J. G. (2021). The Influence of Environmental Conditions on Intake Behavior and Activity by Feedlot Steers Fed Corn or Barley-Based Diets. *Animals*, 11(5), 1261.

The article “Effects of feed additives in cattle fed forage-based diets,” by a research group including **Rodrigo Marques**, was selected to be on the front page of the Journal of Animal Science. You can view that article at: <https://academic.oup.com/jas/article/99/4/skab055/6231515>

Harvey, K.M.; Cooke, R.F.; **Marques, R.S.** Supplementing Trace Minerals to Beef Cows during Gestation to Enhance Productive and Health Responses of the Offspring. *Animals* 2021, 11, 1159. <https://doi.org/10.3390/ani11041159>

Chagas, L. J. Batalha, C.D.A., Danes, M. A., Neto, J. M. S., Macedo, F.L., **Marques, R. S.**, Santos, F. A. P. Protein supplementation to early lactation dairy cows grazing tropical grass: performance and ruminal metabolism. *Animal Science Journal*, 2021. Accepted.

Cappellozza, B. I. and **R. S. Marques**. 2021. Effects of pre-slaughter stress on meat characteristics and consumer experience. Accepted. In: *Meat and Nutrition*. Ed. Ranabhat, C. L. IntechOpen, London, UK.

Limede, A. C., **R. S. Marques**, D. M. Polizel, A. A. Miszura, J. P. R. Barroso, A. S. Martins, L. A. Sardinha, M. Baggio, and A. V. Pires. 2021. Effects of supplementation with narasin, salinomycin, or flavomycin on performance and ruminal fermentation characteristics of *Bos indicus* Nellore cattle fed with forage-based diets. *Journal of Animal Science*. Doi:10.1093/jas/skab005

Parsons, C. T., Dafoe, J. M., **Wyffels, S. A.**, **Van Emon, M.**, **DelCurto, T.**, & Boss, D. L. (2021). The influence of RFI classification and cow age on body weight and body condition change, supplement intake, and grazing behavior of beef cattle winter grazing mixed-grass rangelands. *Translational Animal Science*, accepted in press.

Parsons, C. T., Julia M. Dafoe, **Samuel A. Wyffels**, **Tim DelCurto**, and Darrin L. Boss. (2021). The influence of residual feed intake classification and cow age on body weight and body condition change, supplement intake, resource use, and grazing behavior of beef cattle winter grazing mixed-grass rangelands *Animals*, 11(4), accepted in press.

Sanford, C.D., Owen, M.P.T., Oosthuizen, N., Fontes, P.L.P., Vonnahme, K.A., Nelson, M., Reyaz, A., Lemley, C.O., DiLorenzo, N., & Lamb, G.C. (2021). Effects of administering exogenous bovine somatotropin to beef heifers during the first trimester on conceptus development as well as steroid- and eicosanoid- metabolizing enzymes. *Journal of Animal Science*. skab050.

Cappellozza BI, Bohhnert DW, Reis MM, **Van Emon ML**, Schauer CS, Falck SJ, Cooke RF. 2021. Influence of amount and frequency of protein supplementation to ruminants consuming low-quality cool-season forages: Efficiency of nitrogen utilization in lambs and performance of gestating beef cows *Journal of Animal Science*. skab122

Van Emon, M.; **Sanford, C.**; **McCoski, S.** Impacts of Bovine Trace Mineral Supplementation on Maternal and Offspring Production and Health. *Animals* 2020, 10, 2404. <https://doi.org/10.3390/ani10122404>.

Wyffels, S. A., Dafoe, J. M., **Parsons, C. T.,** Boss, D. L., & **DelCurto, T.** (2021). Relationship of Supplement Intake Behavior to Performance and Grazing Behavior of Cattle Grazing Mixed-Grass Rangelands. *Journal of Agric. Studies.* 9:248-259. doi:10.5296/jas.v9i2.18425.

Dankwa AS, Humagain U, Ishaq SL, **Yeoman CJ,** Clark S, Beitz DC, Testroet ED. 2021. Bacterial communities in the rumen and feces of lactating Holstein dairy cows are not affected when fed reduced-fat dried distillers' grains with solubles. *Animal.* In press.

Turpin R, Slopen N, Borgogna JC, **Yeoman CJ,** He X, Miller RS, Klebanoff MA, Ravel J, Brotman RM. 2021. Perceived Stress and Molecular-BV in the NIH Longitudinal Study of Vaginal Flora. *American Journal of Epidemiology.* In press.

Yeoman CJ, Fields C, Lepercq P, Ruiz P, Forano E, White BA, Mosoni P. 2021. In vivo competitions between *Fibrobacter succinogenes*, *Ruminococcus flavefaciens* and *Ruminococcus albus* in a gnotobiotic sheep model revealed by multi-omic analyses. *mBio.* 12 (2) e03533-20. DOI: 10.1128/mBio.03533-20.

Borgogna JC, Shardell MD, Grace SG, Santori EK, Americus B, Li Z, Ulanov AV, Forney LJ, Nelson T, Brotman RM, Ravel J, **Yeoman CJ.** 2021. Biogenic amines increase the odds of bacterial vaginosis and affect the growth and lactic acid production by vaginal *Lactobacillus* spp. *Applied and Environmental Microbiology.* AEM.03068-20; DOI: 10.1128/AEM.03068-20.

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

[† indicates MSU A&RS graduate student]

Publications:

Epstein, K.†*, D. Wood†, K. Roemert†, B. Currey†, H. Duff†, J.D. Gay†, H. Goemann†, S. Loewent†, M.C. Milligan†, J.A.F. Wendt, E.N. Brookshire, L.B. McNew, D.B. McWethy, B.D. Maxwell, P.C. Stoy, and J.H. Haggerty. 2021. Towards an urgent yet deliberate conservation strategy: sustaining social-ecological systems in rangelands of the Northern Great Plains, Montana. *Ecology and Society* 26(1):10. doi.org/10.5751/ES-12141-260110.

Kurzen, M.†, D. Tyers, J. Rossi, L. McNew, and B. Sowell. 2021. Snowshoe hare use of silviculturally altered conifer forests in the Greater Yellowstone Ecosystem. *Intermountain Journal of Sciences* 21:1–9.

Wyffels, S.A.†, M.K. Petersen, D.L. Boss, B.F. Sowell, T. DelCurto, L.B. McNew, and J.G. Bowman. 2020. Dormant season grazing on northern mixed grass prairie agroecosystems: does protein supplementation and individual animal variation impact beef cattle resource use, vegetation and residual cover. *PLoSOne* 15(10): e0240629.

Milligan, M.C.†, L.I. Berkeley, and L.B. McNew*. 2020. Survival of sharp-tailed grouse under variable livestock grazing management. *Journal of Wildlife Management* 84: 1296–1305.

Milligan, M.C. †, L.I. Berkeley, and L.B. McNew. 2020. Habitat use of sharp-tailed grouse in rangelands managed for livestock. *PLoSOne* 15(6): e0233756.

Mosley, J., B. Roeder, R. Frost, S. Wellst†, L. McNew, and P. Clark. 2020. Mitigating human conflicts with livestock guardian dogs in extensive sheep grazing systems. *Rangeland Ecology and Management* 73:724–732.

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* 73:511–519.

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.

Presentations:

Haynam, R. *, M. Borgreen, J. Carlson, and L. McNew. 2021. Migration, movements and space use of sage-grouse in northcentral Montana. 58th Annual Conference of the Montana chapter of The Wildlife Society, virtual conference.

Jakabosky, O. * E. Leipold*, C. Gower, and L. McNew. 2021. Anthropogenic effects on grouse observations based on road and trail characteristics. 58th Annual Conference of the Montana chapter of The Wildlife Society, virtual conference. (poster).

Grace, S.G. *, C. Carr, L.B. McNew, and C.J. Yeoman. 2021. Wild ruminants possess variable rumen microbial metabolism that degrades the toxic alkaloid methyllycaconitine. 58th Annual Conference of the Montana chapter of The Wildlife Society, virtual conference. (poster).

Grants:

Beaver, J. †, J. Mosley, L. McNew. Bringing Wildlife-Livestock Conflict Mitigation into the 21st Century: Exploring Emerging Technologies to Reduce Wildlife Conflicts on Montana Ranches. MSU College of Agriculture minigrant program, \$47,000. January 2021 – June 2022.

McNew, L.B. Development of new textbook: *Rangeland Wildlife Ecology & Conservation*. Faculty Excellence Grant, Montana State University, \$5,000. July 2020 – June 2021.

McNew, L.B. † and A. Hartshorn. Utility and validation of soil sampling protocols within sage-grouse habitats in Northcentral Montana. Bureau of Land Management, Montana Dakotas Office, \$249,587. July 2020 – June 2025.

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.



Amanda Bradbery has been invited to serve as a Clinician in both the Latin American and Australasia-Africa 2021 Virtual Summit hosted by American Quarter Horse International. She will speak on Equine Nutrition and Management to producers and veterinarians from around the world including China, Japan, Australia, South Africa, Colombia, Argentina and Brazil. Congratulations to Amanda and thank you for being a wonderful MSU ambassador to agriculturalists around the world!

Hannah DelCurto-Wyffels received a merit award of \$2,000 for her work as a non-tenure-track faculty member. This award is based on her work she performed for AY-20-21.

Hannah DelCurto-Wyffels received the Western Region Award for Excellence in College and University Teaching in the Good and Agricultural Sciences.

Research Associate **Devon Ragen** has launched a website through her WSARE project. The Mountain West Grazing Connection website is a place where livestock owners and landowners across the Intermountain West region can find and connect with each other. Users can add a listing for available grazing land or livestock and also explore listings in Montana, Idaho, Wyoming and Utah. Check it out at: www.mountainwestgrazing.com.

Bok Sowell was honored by the Montana State University Alumni Foundation with an Award of Excellence. Nominated by senior student Haylee Barkley, Bok is being recognized for his exceptional guidance, inspiration and outstanding contributions to the academic excellence of MSU students.



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 to formally welcome a few new members to our department.

Dr. Hayes Goosey joined us in February in the position of Extension Forage Specialist.

Danielle Duni and **Wyatt Geis** have joined our farm crew as Town Livestock Foreman and Red Bluff Sheep Foreman, respectively.

Everyone has already hit the ground running and we are so excited to have them with our Department. Welcome to the team Hayes, Danielle, and Wyatt!

Goodbye

Our only goodbye this summer is to our fearless leader, Department Head **Dr. Patrick Hatfield**. We are all wishing Pat a happy retirement!

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



Red Bluff calves enjoying a sunny afternoon, taken by Noah Davis. Apparently one of them missed the memo that it was supposed to be a silly photo! Wishing everyone a great summer full of laughter and fun with friends and family.

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.

