

# ANIMAL & RANGE SCIENCES NEWSLETTER

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## Introduction from Dr. Patrick Hatfield, Department Head



Exciting things are happening this Fall in the Department of Animal and Range Sciences (ARNR) starting with student enrollment. Within the College of Agriculture (COA) we are the fastest growing department. Fall 2016 student numbers indicate we have 404 undergraduate and 28 graduate students enrolled. This is an uptick of 50 undergraduate students from Fall 2015 -- a 14% increase in one year! Moreover, in the past ten years we have experienced a 107% increase in range science students and 57% increase in animal science students. Our surge in animal science students is due in part to our outstanding equine science option.

Additionally, we are proud of our stellar faculty who taught 199 credits in 2015. Student evaluations (1,837 of them) show our students are happy with the quality of instruction as our hardworking teachers received an overall teaching rating of 4.5/5.

As many of you know, in 2015 MSU's COA was ranked the fourth best college in the country for agriculture majors by The Campus Explorer website. This ranking was based on our six diverse departments, five working MSU farms and ranches near campus, specialized research centers across the state, and the popularity and support from the MSU president for agriculture on the MSU campus. Also included in the ranking was the COA scholarship program. The COA awarded \$355,000 in scholarships through one COA application process. Of the 197 scholarships awarded in the COA, 90 scholarships went to ARNR students totaling \$128,120! This is simply an example from one year, but it does demonstrate how our students hard work is rewarded, as well as the generous support in Montana for the next generation of agriculture leaders.

Our department continues to grow, not only with our student enrollment, but with faculty as well. In this issue of our newsletter, we welcome Dr. Tom Murphy. Tom is an Assistant Professor in Animal Science/Sheep Production. Read more about Tom on page 2 of this newsletter. We will welcome Dr. Tim DelCurto in November as the Nancy Cameron Endowed Chair in Range Beef Cattle Production. Watch for more on Tim in our next newsletter.

Dr. Jim Knight (Emeritus Wildlife extension specialist) has returned to the department to help us with a special project involving MSU's upcoming 125 year anniversary. Jim is compiling a history of the department. His research has him sorting through files in basements, the library, and picking the brains of several of our current and retired faculty and staff. There have been some great finds and we will share this history with you when this project is completed.

I look forward to seeing you at Ag Appreciation Friday, November 11. Our Collegiate Stockgrowers will host a reception in the ABB atrium at 4:00 pm on the 11th. And don't forget the Harvest Breakfast at 10:30 am on Saturday the 12th -- before the MSU vs UC Davis game. Recognition of the Outstanding Ag Leader will take place during the first half of the football game.

If you are in town please stop by and see us. Also feel free to contact me with any questions or comments (406) 994-4850 or [Hatfield@montana.edu](mailto:Hatfield@montana.edu).

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## Welcome our Newest Faculty Member: Dr. Tom Murphy

Dr. Tom Murphy is our new Assistant Professor of Sheep Production. His appointment is 60% Research, 30% Teaching, and 10% Service. Tom moved to Bozeman in early August with his girlfriend Megan and their dog Seamus.

Tom grew up in Nebraska and attended the University of Nebraska-Lincoln, earning his B.S. in Animal Science in 2010. As an undergraduate student, Tom competed on UNL's 2009 Livestock Judging team. He also enjoyed participating in Academic Quadrathlon, competing at local and regional events. His original career plan was to be a large animal veterinarian, but a few months before his program began he had a change of heart. He saw Quantitative Genetics and Animal Breeding as the avenue that would best combine his interests in livestock evaluation and Mathematics.

Though his passion has always lived in the American sheep industry, Tom stayed at UNL to complete his M.S., studying long-term selection lines of mice. His specific research focused on the extent that mitochondrial efficiency contributes to differences in feed intake and feed efficiency. He earned his M.S. in 2012 in Animal Science – Breeding and Genetics. His M.S. work gave him an appreciation for basic research, but his true interest was in the genetic evaluation of sheep.

Tom moved to Madison, Wisconsin to begin a Ph.D. at the University of Wisconsin-Madison because of their sheep research stations and strong program in Quantitative Genetics. His main research was focused on the genetic evaluation of dairy sheep in the U.S., utilizing records collected on the Spooner Agricultural Research Station's dairy sheep flock. He was also involved with several projects on the farm flock of purebred meat and wool sheep at the Arlington ARS. Throughout his time in Wisconsin, he enjoyed presenting his research at producer events as well as organizing and officiating 4-H and FFA Livestock Judging and Academic Quadrathlon contests. Tom earned his Ph.D. in Animal Sciences – Breeding and Genetics in August 2016.

Tom's research interests include: developing management tools for producers to use for breeding and nutrition decisions, evaluating the extent of clinical and sub-clinical mastitis in range ewes and strategies to control it, incorporating effective and practical crossbreeding systems into range operations, evaluating the impact of maternal nutrient and mineral source on future progeny performance, and determining the effects of breed and harvest age on flavor profiles and consumer acceptance of American lamb.



## Upcoming Dates

November 8, 2016	Election Day (No Classes; MSU Offices Closed)
November 10-12, 2016	Celebrate Agriculture & Agricultural Economics Outlook Conference
November 11, 2016	Veterans Day Holiday (No Classes; MSU Offices Closed)
November 17-18, 2016	John Deere Agricultural Expo
November 18, 2016	MSU Farrier School ends
November 23-25, 2016	Thanksgiving Day Holiday (No Classes from Nov. 23-25; Offices closed Nov. 24-25)
December 9, 2016	MSU Fall Semester Ends

## Awards, Publications & Presentations

**Jeff Mosley** presented an invited paper at the Montana Range Forum sponsored by the Montana Governor's Rangeland Resources Executive Committee. Jeff's presentation was entitled, "Collaborative Conservation on Montana Rangelands, 1995-2015: 3 Examples."

**Jeff Mosley** presented the keynote summary address at the Sustainable Rangelands Symposium at the National Ranching Heritage Center in Lubbock, Texas. Jeff's presentation was entitled, "Sustainable Ranching, Sustainable Rangelands."

New publication: **Jeff Mosley** and coauthors **Rachel Frost**, Brent Roeder, Tracy Mosley, and Jerry Marks. 2016. [Combined Herbivory by Targeted Sheep Grazing and Biological Control Insects to Suppress Spotted Knapweed \(\*Centaurea stoebe\*\)](#). *Invasive Plant Sci Manag* 9(1): 22-32.

New grant: **Cecil Tharp** was awarded \$25,138 from Montana Wheat and Barley for pesticide education for wheat and barley producers—calibrating sprayers. Grant funds are used to assist wheat and barley producers in understanding how to calibrate their sprayers. A presentation titled 'Calibrating Sprayers using Shortcut Methods' was created using the no-math/shortcut methods. This presentation is now available to MSU Extension trainers statewide and can be downloaded from the MSU Pesticide Education website at [www.pesticides.montana.edu](http://www.pesticides.montana.edu) by selecting 'presentations.' Calibration kits were also created for MSU Extension agents across the state. These kits include one backpack sprayer and props for agents to interactively teach calibration to their farm applicators.

New grant: **Cecil Tharp** was awarded \$16,640 from Montana Wheat and Barley for pesticide education for wheat and barley producers—drift reduction. The MSU Pesticide Education Program has received funding for teaching pesticide applicators the value of selecting appropriate nozzles for spray applications. Applicators must be more aware of spray drift to sensitive areas due to the increase in integrated cropping systems across the state. This grant will be used to build nozzle demonstration kits and demonstration tables for 56 MSU Extension agents in 5 regions of Montana (PAT regions; [www.pesticides.montana.edu](http://www.pesticides.montana.edu)). These kits will include nozzles, presentations, demo table and fact sheets.

Wildlife Publications Awards Committee of the Wildlife Society has selected Lance McNew and his coauthors as the 2016 recipients of the Wildlife Publications Award—Outstanding Article for [Factors affecting female space](#)

[use in ten populations of prairie chickens](#). *Ecosphere* 6 (9): 166. 2015.

**Jeff Mosley** authored "Grazing Decisions During and After Extended Drought" in *Big Sky Small Acres: Rural Living in Montana* magazine.

**Jeff Mosley** coauthored "Grazing Leases," MSU Extension MontGuide 201601AG.

**Jeff Mosley** and colleagues published a research article in *Rangeland Ecology and Management* entitled, "Elk Foraging Site Selection on Foothill and Mountain Rangeland in Spring."

**Hayes Goosey** was an invited speaker at the Natural Resources Conservation Service (NRCS) workshop held at the end of August in Baker, MT. Hayes gave two talks: 1) Insect populations on cropland, beneficial insects, pests, etc. and 2) Dung beetle populations, how to identify, benefits to rangeland.

**Carl Yeoman** was an invited speaker for the Cellular Molecular, & Microbial Biology Seminar series at the University of Montana in Missoula in February and presented a talk entitled "Biogenic amines: Biomarkers of bacterial vaginosis or precursors to vaginal dysbiosis."

New grant: **Carl Yeoman** was part of a team led by Jovanka Voyich (Microbiology & Immunology) awarded \$1,500,000 by the office of the commissioner for higher education for a project entitled "One Medicine: Reducing The Impacts Of Inflammatory And Infectious Diseases On Animal And Human Health."

New grant: **Carl Yeoman** and Elizabeth Rink (Health & Human Development) were awarded \$43,083 by the National Institutes of Health funded Ideas Network of Biomedical Research Excellence to "Build Research Capacity And Community Awareness On The Vaginal Microbiomes Importance To Reproductive Health Among Blackfeet Nation."

New publication: Despres J, Forano E, Lepercq P, Comtet-Marre S, Jubelin G, Chambon C, **Yeoman CJ**, Berg Miller ME, Fields CJ, Martens E, Terrapon N, Henrissat B, White BA, Mosoni P. 2016. Xylan degradation by the human gut [Bacteroides xylanisolvens XB1A \(T\)](#) involves two distinct gene clusters that are linked at the transcriptional level. *BMC Genomics*. 17(1):326. doi: 10.1186/s12864-016-2680-8

## Awards, Publications & Presentations (continued)

New publication: Vlčková K, Gomez A, Petrželková KJ, Whittier CA, Todd AF, **Yeoman CJ**, Nelson KE, Wilson BA, Stumpf RM, Modrý D, White BA, Leigh SR. 2016. [Effect of antibiotic treatment on the gastrointestinal microbiome of free-ranging western lowland gorillas \(\*Gorilla g. gorilla\*\)](#). *Microbial Ecology*. *In press*.

New publication: Gomez A, Petrzelkova KJ, Burns MB, **Yeoman CJ**, Amato KR, Vlckova K, Modry D, Todd A, Jost Robinson CA, Remis MJ, Torralba MG, Morton E, Umaña JD, Carbonero F, Gaskins HR, Nelson KE, Wilson BA, Stumpf RM, White BA, Leigh SR, Blekhan R. 2016. [Gut microbiome of coexisting BaAka pygmies and Bantu reflects gradients of traditional subsistence patterns](#). *Cell Rep*. 14(9):2142-53. doi: 10.1016/j.celrep.2016.02.013.

New publication: Despres J, Forano E, Lepercq P, Comtet-Marre S, Jubelin G, **Yeoman CJ**, Miller ME, Fields CJ, Terrapon N, Le Bourvellec C, Renard CM, Henrissat B, White BA, Mosoni P. 2016. [Unraveling the pectinolytic function of \*Bacteroides xylanisolvens\* using a RNA-seq approach and mutagenesis](#). *BMC Genomics*. 17(1):147. doi: 10.1186/s12864-016-2472-1

New publication: Gomez A, Rothman JM, Petrzelkova K, **Yeoman CJ**, Vickova K, Umana JD, Carr M, Modry D, Todd A, Torralba M, Nelson KE, Stumpf RM, Wilson BA, White BA, Leigh SR. 2016. [Temporal variation selects for diet-microbe co-metabolic traits in the gut of \*Gorilla spp.\*](#) *ISME J*. 10(2):532. doi: 10.1038/ismej.2015.146

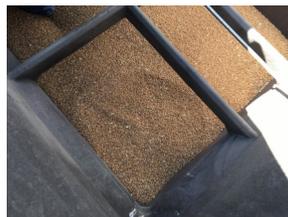
New publication: Amato KR, **Yeoman CJ**, Cerda G, Schmitt C, Danzy Cramer J, Berg Miller ME, Gomez A, Turner T, Wilson BA, Stumpf RM, Nelson KE, White BA, Knight R, Leigh SR. [Variable responses of human and non-human primate gut microbiomes to a Western diet](#). *Microbiome*. 3: 53. doi: 10.1186/s40168-015-0120-7

New grant: **Carl Yeoman** and Seth Walk (Microbiology & Immunology) were awarded \$72,000 to Optimize a new murine model of the human vaginal microbiome: A much needed tool for understanding the connections between vaginal microbes and host health.

New grant: **Hayes Goosey** was awarded a five year award totaling \$492,653 from the United States Fish and Wildlife Service/Montana Fish Wildlife and Parks. The title of this grant is: “Insects 2.0—Investigating the impacts of grazing on invertebrate grouse food, pollinators, and dung beetles in grassland and sagebrush ecosystems.”

New grant: **Hayes Goosey** was awarded a three year award totaling \$100,375 from the USDA NRCS Conservation Effects Assessment Program (CEAP). The title of this grant is: “Quantifying the influences of livestock grazing management on food arthropods of Sage Grouse.”

## Harvest Time at Ft. Ellis



## 2016 Wool Harvesting School

The Montana State University Extension Sheep Program hosted the 2016 Wool Harvesting School March 19-21, 2016 at the MSU Red Bluff Research Facility.

Fifteen students and five instructors participated in the three-day event that provided over 900 ewes for shearing. Mike Schuldt, Custer County Extension Agent, and Brent Roeder, Teton County Extension Agent, were lead instructors for the school with professional shearers Ryan Keyes, Ralph McWilliams and Ben Roeder completing the shearing instructors team.



*Close-up shot of shearing*

To get students started with basic knowledge of what's involved with shearing, they watched an educational video on the proper shearing pattern and participated in a discussion about the sheep shearing industry and expectations of sheep shearers. This was followed by hands-on instruction of equipment maintenance and use - most importantly the hand piece.

Once students were confident in equipment use, they headed to the barn and an ideal start for beginner shearers. Tagging – removing wool from around the eyes and tail of the sheep – allows students the opportunity to get comfortable with shearing before taking on the greater task of shearing the entire sheep. After the students had an opportunity to tag several ewes and become more comfortable operating the shearing equipment, it was time for a break.

Following a fabulous lunch prepared by Dr. Jane Ann Boles, the students headed back to the barn where Mike and Brent once again demonstrated proper shearing techniques on a few sheep before students took their turn. With five stations operating, this allowed three students per instructor. They first began with removing the belly wool, typically discarded before the skirting process. This was followed by the methodical, almost choreographed, techniques used from the New Zealand TECTRA Training Program to completely shear the sheep.

This would be the schedule for the next two days as the students worked to become more independent in their shearing skills. Although instructors were always available, students worked together and most were able to shear sheep from start to finish when day three started.

Mike Schuldt said, “The 2016 MSU Sheep Shearing School was one of the best in the 15 year history of the school. The interest and enthusiasm shown by the students provided the instructors with confidence that this group of students will have a positive impact on the sheep industry.”

In addition to shearing, students learned about equipment maintenance, including sharpening blades. Mike and Ralph showed the various types of blades that are typically used on the job. Instructors also emphasized the necessity for proper clothing and footwear. And, being physically ready was also addressed as instructors demonstrated stretching exercises helpful for a demanding skill.

While taking a break from shearing, Wool Lab Manager, Monica Ebert explained skirting to the students, as it is important for them to understand the quality aspects of the wool they are shearing. Monica demonstrated the process of removing the stained and soiled portions of the fleece from the higher quality areas of the fleece. She emphasized the increased marketability of skirted wool from unprepared wool and encouraged shearers to become advocates for well-prepared wool clips.

## 2016 Wool Harvesting School (continued)

Dr. Whit Stewart, Sheep Extension Specialist, emphasized the importance of animal welfare while shearing and taking necessary breaks when fatigue sets in. “We are stewards of our animals and should strive to keep the sheep as comfortable as possible when harvesting wool,” stated Dr. Stewart. He even took some time to shear!

As pounds and pounds of wool were piling at the shearing stations, Monica and student worker Sarah Spear stayed busy collecting wool samples and weights for research purposes and genetic improvement projects such as The National Sheep Improvement Program.



Monica Ebert skirting the wool for the class.

Other volunteers with shearing experience assisted students as they honed their skills and the Red Bluff staff kept the sheep moving through the stations in an organized manner that turned the barn into a well-oiled shearing operation with some great tunes playing in the background. It was a successful school and we wish these students the best in their future shearing endeavors.

## Steer-A-Year Meat Now Served at Montana State University

Thanks to a partnership between the Montana State University College of Agriculture and the Montana Made Program in University Food Services, meat from steers in the college’s Steer-A-Year program will be served in Miller Dining Commons and at other university events, and profits are used to benefit agriculture students. To read more about this exciting partnership go to: <http://www.montana.edu/news/16300/student-raised-meat-now-served-in-msu-dining-hall>.

Pictures (clockwise): 1) Calves from Steer-A-Year 2) Rex Shevitski collecting hair samples for DNA testing 3) Cole Ryan, Michaela Blevins and Caroline Wild weighing calves 4) Cole Ryan and Rex Shevitski getting ready to ear tag 5) Sam Shearer and Michaela Blevins branding



## Range Science Research Highlights

### Dr. Jeff Mosley, Professor of Range Science and Extension Range Management Specialist

Jeff's research focuses on grazing management and wildlife habitat, emphasizing invasive plants and livestock relationships with fish and wildlife. His current research projects are examining ways to: 1) use cattle grazing to enhance wildlife habitat; 2) protect sheep from predators; 3) control conifer encroachment into foothill rangeland; and 4) use cattle and sheep grazing to suppress noxious weeds.

Jeff and his colleagues have two current projects using cattle grazing to improve wildlife habitat. One project is applying cattle grazing in summer-early fall to improve forage palatability and foraging efficiency of mule deer during the following spring. Another project is applying cattle grazing during late fall to reduce mountain big sagebrush cover and increase the abundance of insects and wildflowers needed by juvenile sage-grouse during early summer. Jeff and colleagues also are examining how far, and under what conditions, livestock protection dogs roam from the rangeland sheep they are guarding. The goal of this project is to refine management practices for minimizing conflicts between guard dogs and recreationists while guard dogs protect sheep from coyotes, mountain lions, bears, and wolves.

Jeff has four current projects that address invasive plants. Two of these projects are investigating ways to suppress conifer encroachment into rangeland, with one project using prescribed fire to suppress tree encroachment into sagebrush rangeland and another project using a tree shear mounted on a skid steer loader to suppress tree encroachment into foothill grassland. Two other research projects are using livestock grazing to suppress noxious weeds. One project is investigating sheep grazing to suppress sulfur cinquefoil, and a second project is exploring cattle grazing to suppress spotted knapweed.

### Mike Frisina, Adjunct Instructor, Range Science

Mike Frisina is working on the Mount Haggin WMA winter range nutrition study with Bok Sowell, Alicia Netter (graduate student) and Vanna Boccadori from MFWP. This team is looking at nutrition of Rough Fescue inside a grazed area and comparing that with an area not grazed by livestock for many years. They are also looking at nutritional content of bitterbrush. This is a 3 year project funded by the MFWP.



*Bok Sowell with Alicia Netter*



*Vanna Boccadori, MFWP*

Mount Haggin WMA winter deer and elk diet overlap. Vanna Boccadori and Mike are working on this and it is 3 year project funded by MFWP.

Jennifer Thomson and Mike are collaborating with scientists in Kyrgyzstan and Tajikistan to conduct the first DNA based taxonomy of wild sheep in those countries. This is a 3 year project. Last year they imported 39 DNA samples which are in the lab and will plan to import additional samples this fall.



*Wild sheep*

## Range Science Research Highlights (continued)

### Lance McNew, Assistant Professor, Wildlife Habitat Ecology

The summer is a busy time for the Wildlife Habitat Ecology Lab. Dr. Lance McNew's research group is currently collecting data on six field studies of wildlife-habitat relationships. Master's student, Brittani Johnson, is working in the Blackfoot Valley to understand how black and grizzly bears interact with temporary electric fencing; she hopes to identify effective fencing designs that reduce bear conflicts with producers while minimizing negative space use effects on bears.



Master's student, Torrey Ritter, has been busy in the field monitoring 20 juvenile beavers radio-tagged last fall and conducting lots of riparian habitat inventories. His study seeks to understand how naturally dispersing beavers select novel settlement sites in order to identify potential sites that may be suitable for beaver restoration in headwater areas of the upper Missouri. Beavers provide a host of ecosystem benefits to downstream water users, including ranchers.

Master's student, Smith Wells has been gathering data from around the Greater Yellowstone Ecosystem in order to evaluate the relationships between grizzly bear depredation of livestock and attributes of Forest Service Grazing allotments. Information on how depredations are influenced by landscape attributes are critical in developing management strategies to minimize conflicts between bears and livestock.



Ph.D. student, Sam Wyffels, is conducting a large-scale field study to evaluate the sustainability of late season cattle grazing of northern mixed-grass prairies. His project seeks to understand how individual variability in supplementation influences cattle behavior, grazing distribution, rangeland health and long-term animal performance.

Three Wildlife Habitat Ecology Lab (WHEL) graduate students are working on a large-scale evaluation of how grazing management affects the demography and space use of the grassland wildlife community in northern mixed-grass prairie habitats. Anthony Veroline (M.S. student) and Megan Milligan (Ph.D. student) are conducting a 4-yr study to evaluate the relationships between grazing management, habitat conditions, and subsequent demography and population growth of sharp-tailed grouse. To accomplish this, they captured more than 250 sharpies and radio-marked more than 60 females this spring on private ranches in eastern Montana. They monitor these hens, their nests, and their broods regularly to quantify vital population rates, and conduct hundreds of habitat inventories across the study area to understand the mechanisms of behavior and population dynamics. Skyler Vold (M.S. student) conducted more than 900 surveys for grassland birds and meso-predators (e.g., coyotes, skunks) during the spring and summer in order to evaluate how grazing management influences land bird and mammal abundance, biodiversity, and community structure.

Megan Milligan



Skyler Vold



Anthony Veroline



## Range Science Research Highlights (continued)

### Dr. Bret Olson, Professor, Range Science

Most beef cattle in Montana are fed hay 3 to 5 months each winter, which typically is a producer's highest variable cost. As an alternative, some producers graze their cattle on rangelands all winter to minimize costs. While grazing winter range, cattle presumably lower their metabolic rates (MRs) to conserve energy, similar to wildlife, without impacting reproductive performance.

In our preliminary study, we determined if MRs of beef cattle track short-term (four days) step-wise decreases, then increases in feeding level. We measured MRs (based on oxygen consumed) and respiratory quotients (RQs; carbon dioxide respired/oxygen consumed) of six, dry Black Angus cows. Initially, all cows were fed unlimited chopped hay for 16 days to determine full feed (100%). Then, in four-day increments, three cows were exposed to a Moderately Restricted (M) feeding level (110% > 110% > 55% > 110% > 110%), three cows were exposed to a Restricted (R) feeding level (110% > 70% > 35% > 70% > 110%). Metabolic rates of all cows were measured the morning after each four-day, step-wise decrease and increase in feeding level.

Metabolic rates tracked feeding level closely. As expected, respiratory quotients declined as feeding levels declined indicating that cattle were rapidly burning fat. Overall, these results suggest that cattle entering winter which are not fed hay during winter, but just graze, lower their metabolic rates to conserve energy. Alternatively, ranchers who feed hay to their cattle during winter may be unnecessarily maintaining elevated metabolic rates at great expense.



*Miriah Reynolds, undergraduate student, working in the field.*

### Dr. Bok Sowell, Professor, Range Science



*Tracking sage-grouse in the Centennial Valley*

In 2014, we started a study to examine the factors which influence the survival of sage-grouse in the Centennial Valley of Montana. This study was initiated with the cooperation of local landowners, beef cattle producers, Red Rock National Wildlife Refuge, the Bureau of Land Management, the US Forest Service, Montana Fish, Wildlife and Parks, the Montana Department of Natural Resources, the Nature Conservancy and Montana State University.

In order to answer these questions, we captured approximately 40-50 sage-grouse hens per year and followed them from breeding season through the brood rearing season for three years. Last year we tracked birds through the winter and we will do that again for the winter of 2016-2017. We will monitor hens through one more nesting season in 2017.

Our preliminary results suggest that about one third of the nests are successful and the type of sagebrush plays an important role in nest selection and success. Sean Schroff just completed his M.S. degree on this study while Kyle Cutting, a PhD student, continues to work on this project.



## Farrier Science at MSU

Farrier science at MSU has been around since 1971, the shop and classroom are located on BART farm across from the Miller pavilion. The shop is equipped with forges and anvils for students to learn the ancient craft of the farrier/blacksmith. Although not as prominent as in years past, the modern day horse is still employed around the world. They are used for farm and ranch work, transportation, draft, packing, law enforcement and, of course, pleasure riding. And while, today's horse may not play the same roles as in years past, their needs have not changed. Hoof care is vital to the overall health of horses and the skills of a professional farrier are in demand, especially in rural areas of Montana. So, twice a year, the MSU Farrier School hosts a new class of students to go through the program. Whether they become professional full-time farriers, work with their own horses or are looking to have a part-time job they enjoy, the 16-week program provides them with the tools necessary to become successful. Some wish to become professional full time farriers, others want to work on their own horses, and some just look to have a part time job they enjoy. Qualified farriers are in demand around the country and especially in rural areas of Montana.



*Spring 2016 MSU Farrier School Students*

The spring session starts the first week of March and ends the last week of June. The fall session begins the first week of August and runs through November. The class is separated into 3 areas: Classroom, forge work, and practical application to the horse's foot. In the classroom students learn anatomy of the lower equine leg, conformation, conformation defects of the entire limb, lameness and injuries of the foot and leg, the different gaits and gait faults that can occur. In the shop students have weekly forge projects to be turned in. Projects usually involve making a tool that will be used for upcoming projects and always a pair or set of shoes that become more advanced as the course progresses. Students start working on horses the first week, trimming excess growth, or in some cases addressing not having enough hoof by applying a shoe. Taking what they learn in the classroom and forge and applying it to the horses foot is a daunting, frustrating and at times a physically trying task.

The program is self-funded through tuition and fees charged to outside horses that come to the shop to be trimmed or shod and field trips that involve larger numbers of horses. We do the hoof care on the approximately 40 MSU horses used for the equitation classes. This is a great resource to have, because we always have horses to work



*Students working in the field*

on or look at when discussing anatomy and conformation. In the field we do guest ranches, working ranches, horses at Yellowstone National Park, a Thoroughbred adoption farm and a re-homing facility. We also go to a Vet clinic in Harlowton, MT twice each class and area people bring horses to us. Students are exposed to a large number of horses ranging from ponies to draft horses. The opportunities we have by going out in the field provide invaluable experience as it exposes students to a variety of working conditions, and allows them to interact with horse owners.

One student currently making news in the farrier world is Tom Petersen, Bozeman, MT. Tom is once again on the world championship blacksmiths (WCB) team. This team is made up of individuals that compete in a series of competitions around the U.S. and at the end of the year the top 4 are named

to the team. They will compete at international contest in the U.S., Canada and Great Britain. Josh Stanley, Bozeman, MT is a past member of the American Farriers Association (AFA) team and they compete at the same international contests as the WCB team. Josh is currently the AFA team coach/manager. In June at a WCB contest in Utah, Tom finished 2nd, Josh 3rd and also finishing in the top 30 were Cole McElroy, Belgrade, MT and Kyd Kelley, Three Forks, MT, both former MSU students.

For more information on the MSU Farrier School please contact Bryce Kawasaki or Susan Cooper at 406-994-3722 or by Email at: [scooper@montana.edu](mailto:scooper@montana.edu).

## Student News



### Students attend Montana Meat Processors Association Annual Meeting

Montana Meat Processors Association has their annual meeting every April. This year it was held in Jordan, MT. Three students from the Animal and Range Sciences Department attended this year with Dr. Jane Ann Boles. During this convention there are various seminars for processors but bragging rights for the processors rests in the cured meats room where over 200 products are judged for overall workmanship and flavor. This year Lauren Kett, Dallas Mayorga and Katharine Perz also entered products they developed in Meat Processing. Lauren Kett entered a Spicy Breakfast sausage with fiber, Dallas Mayorga entered a Beef and Pork Linguica and Katharine Perz entered Tropical Marinated Beef Short Ribs. The students also helped to evaluate the products alongside Ron Richards and James Nasados from the University of Idaho and meat processing equipment suppliers from across the Northwest.

### Congressional Visits Day: Communicating the importance of biological research to policymakers in Washington, D.C.

The American Society of Mammologists' Student Science Policy Award (SSPA) is an opportunity for graduate students to visit Washington, D.C., receive public policy training, and participate in the Biological and Ecological Sciences Coalition Congressional Visits Day (CVD). Elizabeth Flesch, Ph.D. student in the Animal and Range Sciences Department, received this award to participate in CVD in April 2016. During this event, she met with Congressional staff on Capitol Hill to discuss the importance of federal investment in biological research and the National Science Foundation. Coalition Congressional Visits Day is important because it contributes to policymakers' understanding of biological and mammalian research. This increased knowledge can serve to positively affect the decisions of policymakers on Congressional bills that impact the country's natural resources. In addition, federal investment in basic biological research provides the United States with data necessary to make informed decisions about our country's ecological future.

### 2016 Jarecki Foundation Student Loan Repayment Grant

Tiffany Dawn Salvesson received a \$5,000 award from the Jarecki Foundation. Chuck and Penny Jarecki's scholarship is unique because the award goes directly to pay-off student loan principle. Tiffany transferred from Miles City and since arriving at MSU has been involved in everything related to natural resources and range including Range Club, poster presentations at the Northwest Science meeting, field classes, etc. Tiffany typifies the budding range management professional which this award was set up to recognize.

### Graduate Student Grant Awarded from the Western SARE Program

**Sam Wyffels** was awarded a Graduate Student Grant from the Western SARE Program. The grant is titled: "Sustainability of dormant season grazing: Does protein supplementation impact beef cattle performance, soil organic matter, vegetation, and residual cover for wildlife?" Sam will be working with **Lance McNew** and **Jan Bowman** on this grant.

### National Student Congress on Public Land Policy for Land Management

Smith Wells, graduate student (MS), has been selected to participate in the third National Student Congress on Public Land Policy for Land Management, sponsored by the Public Lands Foundation (PLF) and the Bureau of Land Management (BLM) Las Cruces District. The event is scheduled for September 8-11, 2016 in Las Cruces. Smith was selected for her interest in the outdoors and the science behind managing natural resources. [Click here to read more about this prestigious honor.](#)

## Student News (continued)

### Montana Nutrition Conference Poster Awards for 2016

- ◆ Graduate student, **Omolola Betiku**, was awarded first place in the student poster competition for her poster on the *Evaluation of protein reduction and essential amino acids supplementation of plant and animal protein-based diets on rainbow trout (*Oncorhynchus mykiss*) production.*
- ◆ Graduate student, **Medora Lachman**, was awarded second place in the student poster competition for her poster on *The intertwined successional development of the lamb gut microbiota and immune system.*
- ◆ Graduate student, **Emily Gates**, was awarded third place in the student poster competition for her poster on *Forage fiber digestibility in the northern mixed grass prairie following spring wildfire.*
- ◆ Undergraduate student, **Amanda Williams**, was awarded the undergraduate poster award for her poster *Evaluating the use of BMR (Brown Midrib) corn as an acceptable forage source for grazing cattle.*

### Laurie Henneman Outstanding Student Presentation Award

Graduate Student **Medora Lachman** was awarded the Laurie Henneman Outstanding Student Presentation award at the 2016 Montana Academy of Sciences annual meeting for her presentation on the intertwined successional development of the lamb gut microbiota and immune system.

### Travel Scholarship to Present Dissertation Work

Graduate student, **Joanna Borgogna** was awarded an Infectious Diseases Society for Obstetrics and Gynecology (IDSOG) trainee travel scholarship to present her dissertation work at the annual meeting in Annapolis, MD (August 2016).

### Undergraduate Summer Scholarship from the National Institutes of Health

Undergraduate student **Katheryn Perea** was awarded a \$5,600 summer scholarship from the National Institutes of Health funded Ideas Network of Biomedical Research Excellence to analyze the microbiology across the entire gastrointestinal tract of lambs that varied in feed efficiency phenotypes. The project is a collaborative research effort from Drs. Carl Yeoman and Jennifer Thomson.

### Collegiate CattleWomen Can the Griz again

For the fourth year in a row the Collegiate CattleWomen brought in the most food for campus clubs in the Can the Griz Food Drive on the MSU Campus. The club was also participating in the College Aggies Online (CAO) Competition which resulted in Tyson Foods donating protein to the Gallatin County Food bank. The donation was the result of a challenge posed to the 2015 fall's participants in the Alliance's CAO program. CAO, an online competition open to all college students interested in agriculture, helps college students utilize social media and engagement activities to share the story of American agriculture. CAO is a nationwide initiative aimed at helping college students and collegiate agriculture clubs utilize social media and community engagement to share agriculture's story. For the second time, The Montana State University Collegiate CattleWomen took home top honors, edging out Florida State University Collegiate CattleWomen, in the food drive competition by collecting more than 1,100 pounds of food to donate to the Gallatin Valley Food Bank. This win resulted in the extra donation in their honor from CAO program sponsor Tyson Foods.



## Student News (continued)

### Montana Stockgrowers Association (MSGA) Research Education and Endowment Foundation (REEF) Educational Heritage Scholarship

Amanda Williams has been chosen as the recipient of this \$1,000 scholarship. Amanda is from Miles City, Montana where she grew up on the family ranch, 2DO Ranch. She is currently majoring in Animal Science with a minor in Rangeland Management and Ecology. Amanda currently serves as President of the MSU Collegiate Stockgrowers. She is also active in the Range Club, College of Ag Student Council, Collegiate Cattlewomen, Collegiate FFA, Collegiate Young Farmers and Ranchers, MSU Plant ID team and the Undergraduate Range Management Exam team. She has been on the Dean's List twice and the President's List. Congratulations Amanda!

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### “Meat at the Finish Line” Annual 5K Run

Montana State University's Collegiate Cattlewomen held their annual “Meat at the Finish Line” 5K run on September 3, 2016. The run started and ended at the Animal Bioscience Building and included runners, walkers, strollers and dogs! Participants were treated to a barbecue put on by this student organization. The money raised goes to the Collegiate Cattlewomen student organization. A great time was had by all, congrats to all the students that helped put this on and their advisor Dr. Jane Boles!



## Other News

On June 9, 2016, Bok Sowell and Mike Frisina spent the day in the Bridger area, with a group of land managers from the Montana Department of Natural Resources and Conservation (MT DNRC). They discussed big sagebrush ecology and ways to assess sage-grouse habitats. There were about 15 land managers present. The photo is of our group out on some DNRC managed sage-grouse habitat. They also spent part of the day at the Federal Bridger Plant Materials Center.



Dr. Tim DelCurto will be joining our department in November of 2016 as the Nancy Cameron Endowed Chair/ Professor of Animal Science. We will have more information on Tim in the next newsletter, but wanted to take this opportunity to welcome him to Montana State University, Department of Animal & Range Sciences.



## Facebook

We would like to invite you to “Like us” on Facebook and keep up with the latest postings on the Department of Animal & Range Sciences. You will find job postings, internship opportunities, award announcements, upcoming events, etc. You can find our page at: <https://www.facebook.com/MSU.Animal.Range.Sciences/?fref=ts>



## Help Support Animal and Range Sciences

A gift to the department is a great way to support student and faculty endeavors. Donations can be earmarked for student scholarship funds, faculty research, the new Animal Bioscience Building, and more.

For more information about making a donation to the department contact:

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*Animal Bioscience Building*

