

# ANIMAL & RANGE SCIENCES NEWSLETTER

Volume 9, Issue 1

February 2016

## Introduction from Dr. Patrick Hatfield, Department Head



Welcome to the latest edition of the Department of Animal & Range Sciences newsletter. There is lots of good news coming from the department. I would like to give you some brief updates on what has been going on since our last newsletter.

I am pleased to announce Tom Murphy, currently at the University of Wisconsin in Madison, has accepted the position of Assistant Professor - Animal Science/Sheep Production. Tom will be joining the department in August of this year.

Our search committee for the Nancy Cameron Endowed Chair in Beef Physiology is hard at work. We are hoping to have a short list of outstanding candidates to invite to interview in the very near future.

The Campus Explorer website had a recent article titled *4 Best Colleges for Agriculture Majors* and we were ranked #4 please check out his article at:

<http://www.campusexplorer.com/college-advice-tips/04B88379/4-Best-Colleges-for-Agriculture-Majors/>.

In early September of 2015 our department was reviewed by a team of peers representing the Society of Range Management (SRM) accreditation process. The team consisted of Dr. Derek Bailey (New Mexico State University), Dr. Karen Hickman (Oklahoma State University), Dr. Roy Roath (Colorado State University) and Dennis Phillipi (Natural Resource Options, Inc.). We recently received the news that we passed this review and now can add that we have an SRM accredited Range Science program. I would like to take this opportunity to thank all faculty, staff and students that were involved in this review. You can find more information about the SRM Accreditation in our Other News section of this newsletter.

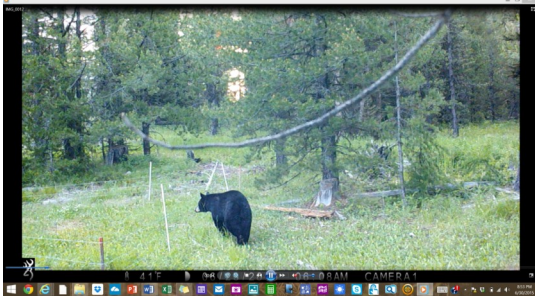
Once again we are looking at record enrollment with approximately 350 undergraduate students enrolled for the Spring 2016 semester. We currently have 33 graduate students working with us and I hope you will take a moment to read about them in this newsletter.

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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## Research Highlight: Dr. Lance McNew Investigations to Reduce Agriculture-Bear Conflicts in Montana

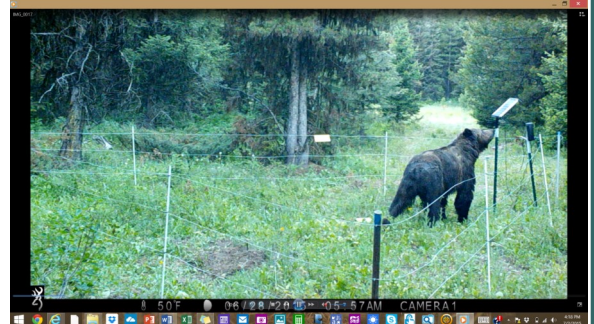


*A black bear considers the bait inside an electric fence enclosure.*

Increasing agriculture-bear conflicts on both public and private lands require innovative approaches to conserve wildlife while also preserving the economic viability of Montana farmers and ranchers. Recent advances in electric fencing materials including polywire and improved energizers, as well as automated deployment devices, have improved livestock management at reduced costs relative to standard barbed wire fences. As a result, interest in using electric fencing to deter depredating bears from agricultural lands has increased. However, scientific evaluations of the efficacy of temporary electric fencing at deterring predators from

crops and livestock are needed before cost-sharing or technical assistance for electric fencing can be included as part of conservation programs.

In 2015, Dr. Lance McNew and graduate student, Brittani Johnson, began a multi-faceted study in the Blackfoot Valley to test the efficacy of various rapid-deployment electric fencing designs in deterring bears from agricultural lands, and evaluate landscape level space use and permeability of agricultural lands relative to electric fences. Partners for the study include: the Blackfoot Challenge, Montana Department of Fish, Wildlife, and Parks, the Montana Outdoor Legacy Foundation, the Rolling Stone Ranch, Tru-Test, U.S. Fish and Wildlife Service, and Vital Ground.



*Another black bear inspecting the equipment inside an uncharged electric fence.*

Results of this research will have direct implications for crop and livestock production in the state, as well as state and federal wildlife management of bears and human-wildlife conflicts. Cost-effective and non-lethal solutions to human-bear conflicts will benefit producers by reducing economic impacts of wildlife damage and benefit wildlife by reducing negative encounters with humans.

More information can be found at the Wildlife Habitat Ecology Lab's webpage: <http://animalrange.montana.edu/faculty/rangescience/mcnresearch.html>

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*A coyote takes a peak at one of Brittani's fenced enclosures.*

## Upcoming Dates

February 15, 2016	President's Day (No Classes, MSU Offices Closed)
March 7 - June 24, 2016	2016 Spring Session of the MSU Farrier School
March 14-18, 2016	MSU Spring Break(No Classes, MSU Offices open)
March 25, 2016	University Day (No Classes, MSU Offices open)
April 29, 2016	Classes End
May 6, 2016	Spring Semester Ends
May 7, 2016	MSU Commencement

## Awards, Publications & Presentations

New grant: **McNew, L.B.**, L. Berkeley, J. Ensign, and M. Foster. Effects of livestock grazing management on the ecology of sharp-tailed grouse, grassland birds, and their predators in mixed grass prairie habitats of Montana. U.S. Wildlife Aid and Restoration Program, Montana Department of Fish, Wildlife, and Parks, \$533,975. January 2015 – December 2019.

New grant: **McNew, L.B.**, D. Tyres, and **B. Sowell**. Distribution of grizzly bears in relationship to Forest Service grazing allotments and moth aggregation sites in the Greater Yellowstone Ecosystem. U.S. Forest Service, \$80,000. August 2015 – December 2019.

New grant: **Lance McNew** will be receiving \$19,000 to expand graduate student research assessing the efficacy of rapid-deployment electric fencing for preventing bear and ungulate damage to livestock and crops. Blackfoot Challenge, \$19,000. December 2015 – May 2017.

New publication: Winder, V.L., K.M. Carrlson, A.J. Gregory, C.A. Hagen, D.A. Haukos, D.C. Kesler, L.C. Larsson, **L.B. McNew**, M.A. Patten, J.C. Pitman, L.A. Powell, J. Smith, T. Thompson, D.H. Wolfe, and B.K. Sandercock. 2015. Factors affecting female space use in ten populations of prairie chickens. *Ecosphere* 6(9): 166. <http://onlinelibrary.wiley.com/doi/10.1890/ES14-00536.1/abstract>

New publication: **Nelson TM, Borgogna JL, Brotman RM, Ravel J, Walk ST, Yeoman CJ**. 2015. Vaginal biogenic amines: Biomarkers of bacterial vaginosis or precursors to vaginal dysbiosis. *Front. Physiol.* 6: 253 <http://journal.frontiersin.org/article/10.3389/fphys.2015.00253/full>

New publication: Henderson G et al. (incl. **Suzanne Ishaq Pellegrini, Medora Lachman, Jeff Swartz, and Carl Yeoman**) 2015. [Rumen microbial community composition varies with diet and host, but a core microbiome is found across a wide geographical range](#). *Scientific Reports* 5: 14567

New grant: **Pat Hatfield, Emily Glunk, Carl J. Yeoman**, and Darrin Boss were part of a team awarded \$2,276,734 for research to increase the profitability of Montana's farm and ranch lands by improving farming efficiency by the Montana University System.

New grant: **Cecil Tharp** was awarded this Crop Life America Grant. Pesticide Modernization and Sustainability Initiative. \$48,307. July 2015 – July 2017. Purpose of grant is to leverage funding for a more robust pesticide safety education program in Montana. This funding supports increased outreach, surveys of stakeholders, advisory panels, stakeholder panels and potential legislation to support MSU Extension's Pesticide Education Program.

New grant: **Cecil Tharp** was awarded a Wheat and Barley Grant for the Montana Private Applicator Program in the amount of \$25,138. Purpose of grant is to support calibration programs targeting wheat and barley producers while creating calibration kits for pesticide trainers across Montana.

New publication: Kitchen, K.A., Goldsmith B., Robison-Cox J., **Frisina M.**, and **Sowell, B.** 2016. [Sagebrush response to conifer cover](#). *Environmental Management and Sustainable Development*. Vol. 5, No. 1:17-29.

**Elizabeth Flesch**, PhD student, was awarded a 5 year NSF Graduate Fellowship to study Rocky Mountain Bighorn Sheep Genetics and a \$5000 additional grant from National Geographic to include Glacier Bighorn Sheep in her research.

New publication: Lean, I.J., et al (incl. **Jennifer M. Thomson**) Invited review: [Recommendations for reporting intervention studies on reproductive performance in dairy cattle: Improving design, analysis, and interpretation of research on reproduction](#). *J. of Dairy Sci.* 1:1-17.



## Extension Research Highlight: Dr. Megan Van Emon's Project Utilizing Sugar Beets in Steer Backgrounding Rations



*Megan and steers at BART Farm*

The project is based on questions received from producers in 2014 about the feeding of whole sugar beets and at what concentration of the diet can you feed whole sugar beets. Whole sugar beets were purchased from Western Sugar Cooperative in Billings, Montana. The grant is funded by the The Bair Ranch Foundation.

The main objective of this project is to determine the optimum inclusion rate of sugar beets in steer backgrounding rations. Currently, a 56 day backgrounding trial is underway at the Bozeman Agricultural Research Teaching (BART) farm using 48 steer calves from the Red Bluff Research Ranch. Upon arrival at the

BART farm, steers were fitted with electronic identification tags and weighed on two consecutive days. Steers were then allocated to one of four dietary treatments: 1) control diet, no sugar beet inclusion; 2) 15% sugar beets; 3) 30% sugar beets; and 4) 45% sugar beets. All sugar beets directly replaced barley on a dry matter basis and diets were formulated to meet or exceed nutrition requirements of growing steer calves. Sugar beets are being processed through a wood chipper to reduce the size of the beets to minimize the choking hazard. Individual feed intake will be measured on all steers using GrowSafe bunks, which are equipped to read the electronic IDs. Body weights, average daily gains, and feed efficiency will be measured on all steers.

A second project will be conducted in the late summer/fall of 2016 determining the impacts of feeding sugar beets on sheep nutrient metabolism. Similar dietary treatments of the steers will be fed to the sheep. This second project will aid us in determining the cause of any performance effects sugar beets may have had on steer performance.



*Megan and students (L to R) Maria Goettemoeller, Brady Johnson and Abby Keyser*

## Welcome to our new Wool Lab Manager, Monica Ebert



Monica is the new manager of the Montana Wool Lab. Originally from Northeast Kansas, Monica grew up on a small purebred sheep operation. This past December, she received her Master's degree from Angelo State University where she focused her research efforts on sheep genetics and wool apparel product development. Through the development of a supply chain entirely within the United States textile industry she has developed strong relationships with apparel manufacturers in the United States. Having received her Bachelor's degrees in Apparel Design and Apparel Marketing from Kansas State University, her thesis research project allowed her to gain a better understanding of the entire process of the manufacturing of apparel goods starting with raw wool production. Through her graduate research assistantship with the Texas A&M AgriLife Bill Sims Wool and Mohair research laboratory she had the opportunity to assist in conducting research relevant to the wool industry helping ensure the sustainability of the United States wool industry. Monica can be

reached at (406) 994-2100 or [monica.ebert@montana.edu](mailto:monica.ebert@montana.edu).

## Meet our Graduate Students

**Omolola Betiku** (Osun State, Nigeria) Omolola's research focuses on using alternative ingredients in formulating cost-effective fish diets that support maximum growth and health of fish. Major advisor(s): Drs. Glenn Duff and Wendy Sealey. Expected PhD graduation: Fall 2016

**Sarah Blatter** (Kaysville, UT) Sarah is assessing the pattern of gene expression in muscle and adipose tissue and its relationship to growth and quality grade of beef carcasses. Major advisor: Dr. Jennifer Thomson. Expected MS graduation: Fall 2017

**Joanna Borgogna** (San Diego, CA) Joanna broadly investigates the vaginal microbiome and metabolome of women in relation to disease and health. Major advisor: Dr. Carl Yeoman. Expected PhD graduation: 2019

**Laura Brutscher** (Little Falls, MN) Laura is researching honey bee antiviral immunity and the role of the microbiome in colony health, as well as the wheat stem sawfly microbiome. Major advisor(s): Drs. Carl Yeoman and Michelle Flenniken (Plant Sciences & Plant Pathology). Expected PhD graduation date: Spring 2017

**Molly Butler** (San Angelo, TX) Molly is evaluating the differences in confinement finishing and cover crop grazing systems on carcass characteristics, performance and parasite loads in sheep. Major advisor: Dr. Pat Hatfield. Expected PhD graduation date: Summer 2016

**Cayce Cover** (Ardmore, OK) Cayce is researching the effects of prebiotics and probiotics on fecal microbiota and equine digestion in horses fed common diets. Major advisor: Dr. Shannon Moreaux. Expected MS graduation date: Spring 2017

**Kyle Cutting** (Lima, MT) Kyle is working with sage grouse and grazing in the Centennial Valley, MT. Kyle is currently the Wildlife Biologist for Red Rock Lakes Wildlife Refuge. Major advisor(s): Drs. Bok Sowell Jay Rotella and Dan Tyres. Expected PhD graduation: Fall 2017

**Eric Elkins** (Bolivar, OH) Eric is studying the ecology of conifers, red squirrels and grizzly bears in the Greater Yellowstone area. Major advisor(s): Drs. Dan Tyres and Bok Sowell. Expected MS graduation: Spring 2017

**Elizabeth Flesch** (Bettendorf, IA) Elizabeth is researching bighorn sheep genetics. Major advisor(s):

Drs. Jennifer Thomson and Bob Garrott (Ecology). Expected PhD graduation: Spring 2019

**Neto Garcia** (Brazil) Neto's research is generalizing and transferring a GIS-based bison distribution model from one hot spot to another hot spot. Major advisor: Dr. Clayton Marlow. Expected PhD graduation: Fall 2017

**Emily Gates** (Billings, MT) Emily's research is on the effects of wildfire on northern mixed grass prairie. Major advisor: Dr. Clayton Marlow. Expected MS graduation: May 2016

**Rashelle Herrygers** (Bozeman, MT) Rashelle is studying reproduction physiology and metabolomics in sheep, cattle, mountain goats and big horn sheep. Major advisor: Dr. Jim Berardinelli. Expected MS graduation: Spring 2016

**Ashton Hubbard** (Red Bluff, CA) Ashton's research is investigating whether calcium propionate elicits similar feed efficiency and reproductive responses as Ruminants in in developing heifers. Major advisor: Dr. Rachel Endecott. Expected MS graduation date: Fall 2017

**Brittani Johnson** (Stevensville, MT) Brittani's research focuses on electric fence permeability and how it affects grizzly and black bear movement on a small and large scale in the Blackfoot Valley of Montana. Brittani has been a seasonal bear technician for Montana Fish, Wildlife and Parks for the past three years. Major advisor: Dr. Lance McNew. Expected MS graduation: Spring 2018

**Mark Kurzen** (Massillon, OH) Mark is studying snowshoe hare population and habitat selection in the Bear Creek drainage. Major advisor(s): Drs. Dan Tyres and Bok Sowell. Expected MS graduation: TBD

**Medora Lachman** (Polson, MT) Medora is working on a USDA and Land 'o' Lakes supported project characterizing the sources and successional development of the rumen microbiota in lambs and the impact of these early microbes on immunological development. Major advisor: Dr. Carl Yeoman. Expected MS graduation: Summer 2016

**Ronald Lodgepole** (Rocky Boy, MT) Ronnie's research is on Bison management for cultural and commercial production. Major advisor: Dr. Clayton Marlow. Expected PhD graduation: Spring 2018

## Meet our Graduate Students (continued)

**Ian McGregor** (Wake Forest, NC) Ian is determining the impacts of sugar beets on steer backgrounding performance and sheep nutrient metabolism. Major advisor: Dr. Megan Van Emon. Expected MS graduation: TBD

**Alicia Netter** (Spanaway, WA) Alicia's research involves the study of moose/willow and trophic cascades. Major advisor(s): Drs. Bok Sowell and Dan Tyres. Expected MS graduation: Spring 2017

**Rebecca Ozeran** (Yuba City, CA) Rebecca's research project is quantifying relationships between cheatgrass invasion patterns and biotic and abiotic site characteristics in the Northern Great Plains. Major advisor: Dr. Craig Carr. Expected MS graduation: Spring 2016

**Chad Page** (Chandler, AZ) Chad is working on trace mineral survey in weaned ram lambs across Montana, and chelated mineral supplementation and the effects it has on fertility and growth in ram lambs. Major advisor: Dr. Whit Stewart. Expected MS graduation: Fall 2017

**Jarrett Payne** (Twin Bridges, MT) Jarrett is researching targeted cattle grazing to improve greater sage grouse brood rearing habitat through protein supplementation. Major advisor: Dr. Jeff Mosley. Expected MS graduation: Spring 2018

**Katharine Perz** (Sayville, NY) Kate is investigating the molecular mechanisms that cause variation in livestock feed efficiency. Major advisor: Dr. Jennifer Thomson. Expected PhD graduation: December 2016

**Brooke Regan** (Loveland, CO) Brooke is studying grizzly bear utilization of spring deer and elk carrion on the Northern Yellowstone Winter Range. Her research is focused on temporal patterns in carrion abundance, the factors related to differences in grizzly bear scavenging outside versus inside Yellowstone National Park, as well as the most effective methods for detecting carrion resources on the landscape. Major advisor: Dr. Bok Sowell. Expected MS graduation: Spring 2016

**Torrey Ritter** (Hamilton, MT) Torrey is conducting research on habitat selection, movements, and survival of juvenile beavers in southwest Montana. He is investigating settlement site selection by dispersing beavers to guide future beaver restoration efforts. Major advisor: Dr. Lance McNew. Expected MS graduation: Fall 2017

**Joao Rossi** (Sao Paulo, Brazil) Joao is conducting research on the effects of anthropogenic activities on grizzly bear habitat selection. Major advisor(s): Drs. Dan Tyres and Bok Sowell. Expected MS graduation: Spring 2016

**Anish Sapkota** (Chitwan, Nepal) Anish's research is on optimizing boron maintenance fertilization for alfalfa. Major advisor(s): Drs. Emily Glunk and Jessica Torrior. Expected MS graduation: Fall 2017

**Sean Schroff** (Harrison, OH) Sean is researching the nest site selection of sage-grouse hens and how cattle grazing/presence effect the home range size/movement of sage-grouse broods. Major advisor: Dr. Bok Sowell. Expected MS graduation: Spring 2016

**Danielle Staudenmeyer** (Dillon, MT) Danielle's research topics include the effects of feeding reduced-lignin alfalfa on growing beef cattle performance and evaluating dry matter and forage quality loss associated with different methods of outdoor hay storage in Montana. Major advisor: Dr. Emily Glunk. Expected MS graduation: Spring 2017

**Nichole Walker** (Ennis, MT) Nichole is researching how grizzly bears are using forest successional stages in Island Park, ID. This is interesting because of the long history of clear-cutting and other timber treatments in that area. Major advisor(s): Drs. Dan Tyres and Bok Sowell. Expected MS graduation: Fall 2016

**Jasmine Westbrook** (Napa County, CA) Jasmine is studying the integration of sheep and crop production and the effects of grazing for cover crop termination on sheep weight gains, cover crop mortality, and winter wheat yield. Major advisor: Dr. Craig Carr. Expected MS graduation: Spring 2016

**Smith Wells** (Helena, MT) Smith's research is on grizzly bear use of Forest Service grazing allotments in the Greater Yellowstone area. Major advisor: Dr. Lance McNew. Expected MS graduation: Spring 2017

**Samuel Wyffels** (Baker City, OR) Sam's research will involve looking at ecology and ecophysiology of late season grazing management systems. Major advisor: Dr. Lance McNew. Expected PhD graduation: Fall of 2018



## Student News



### MSU Intercollegiate Horse Show Association (IHSA) Club

We would like to congratulate the MSU Intercollegiate Horse Show Association club on their fantastic wins November 21 and 22, 2015. The team hosted three shows at the Galatin River Ranch facility located in Manhattan, MT. This was the first show held off-campus in several years, and was a great success. The team won High Point Team at all three of the shows, as well as individual rider Grand and Reserve champions

throughout the weekend. The teams competing were from USU, UM, UMW, MSU Billings, as well as Rocky Mountain College. The team is very excited and looking to continue their success through the spring shows. They were also extremely thankful for the 32 horses that were donated from volunteers throughout the community.



### Steer-A-Year

The 2015-16 Steer-a-Year program is off to a great start. Through the help of all the students and producers around the state we now have 25 steers on campus. Students in the steer-a-year class are in charge of daily management and care for the steers. During the duration of the year students experience all aspects of finishing cattle from receiving calves to carcass processing. Numerous industry representatives have taken the time to talk with the class on various subjects including formulating rations, designing receiving protocols and implant strategies as well as cattle market discussions. Overall, we have seen tremendous support and response throughout the state and we thank you for making this program possible.

Last November students from MSU Animal and Range Sciences Steer-a-Year class took part in the annual Montana Farm Bureau Convention. Not only did students have the ability to attend meetings and workshops they also had the opportunity to meet numerous producers from around the state at our tradeshow booth. Students manned the booth throughout the duration of the convention in order to promote both the department and the steer-a-year program. Additionally, members of the livestock judging team helped put on officials and serve as oral reasons judges during the bull and heifer showcase livestock judging contest sponsored by the Montana Farm Bureau. MSU students even had the opportunity to visit with the Governor of Montana. Thank you to the Montana Farm Bureau for putting on a wonderful convention and providing opportunities for our students.

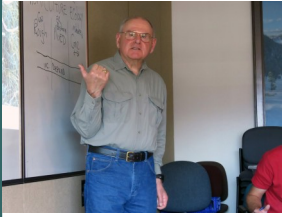


### Livestock Judging Team

This year the MSU livestock judging team has participated in numerous events and helped with contests throughout the state. Students from MSU took part in the Intermountain Livestock Judges Training in Spanish Fork, Utah. The goal of this training is to prepare judges to officiate county fairs. Judging team members also helped in officiating the MAGIE, FFA State Livestock Judging Contest, 4-H State Livestock Judging Contest, Ruby Valley Livestock Judging Invitational, John Deere Ag Expo Livestock Judging Contest, Montana Farm Bureau Cattle Judging Contest and participated at the NILE and the Ken Laubach Memorial Livestock Judging Contest. The MSU livestock judging team capped off the year by competing in the Arizona National Livestock Judging Contest in Phoenix, AZ December 2015. The seven member team consisted of Cole Ryan, Miles City MT, Hayley Richards, Ontario OR, Joe Evans, Winchester, VA, Lauren Kett, Dixon, CA, Michaela Blevins, Ronan, MT, Raquel Schenk, Alder MT, and Sarah Manning, Livingston MT. The team placed fourth in the contest with division placing of third in the swine, and fourth in cattle, sheep, and oral reasons.



## Other News



In late September of 2015 Mike Frisina was asked to put on a shrub ID, Ecology and Management Training Session for a selected group of Montana Fish, Wildlife and Parks (MFWP) biologists. They spent 1.5 days on field trips identifying shrubs at Mt. Fleecer Wildlife Management Area and Lewis & Clark Caverns. Additionally 1.5 days were spent in class at the Butte MFWP office.



2015 Pest Management Tour. The Montana State University Pesticide Education and Integrated Pest Management Programs offered the Pest Management Tour (PMT) for private and commercial applicators across north-central Montana (Private Applicator Region 3; North-Central MT) from October 6th – 10th. This program that visits 9 locations in 5 days was designed to target regions in Montana that are in the final year of the private applicator recertification cycle. Region 3 private applicators must attain six private applicator recertification credits by January 1st, 2016 to re-qualify into the next certification cycle. Region 3 PMT participants include Glacier, Pondera, Teton, Cascade, Chouteau, Toole, Liberty, Hill and Blaine counties.

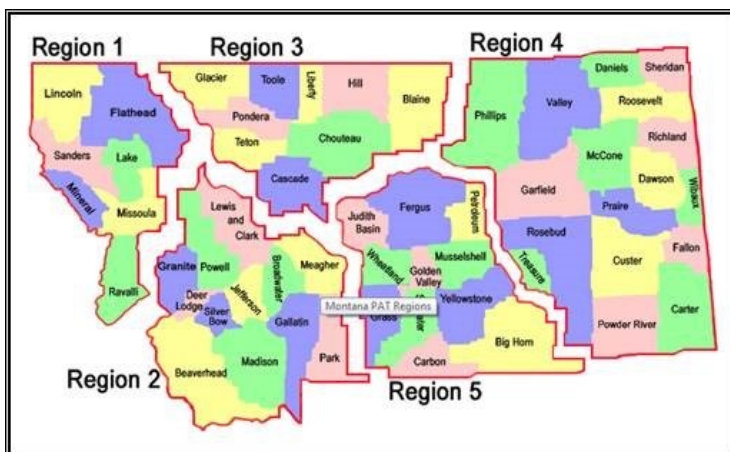


Figure 1. Map of Montana private pesticide applicator training regions.

Speakers delivered presentations on calibration, livestock insect pests, cropland insect pests, plant disease management, cheat grass, herbicide resistance, forage pest management and other cropland weeds. MSU representatives that presented on the tour included Dr. Fabian Menalled (MSU Cropland Weed Specialist), Dr. Jane Mangold (MSU Rangeland Weed), **Dr. Emily Glunk** (MSU Forage Specialist), Dr. Kevin Wanner (MSU Crop Insect Specialist), Noelle Orloff (MSU Plant Diagnostician), **Dr. Greg Johnson** (MSU Veterinary Entomologist) and **Dr. Cecil Tharp** (MSU Pesticide Education Specialist).

In January our BS degree in Natural Resources and Rangeland Ecology was accredited by the Society for Range Management (SRM). Both options within our undergraduate range science degree, the Rangeland Ecology and Management Option and the Wildlife Habitat Ecology and Management Option, were accredited after a year-long process that included preparation of an 89-page self-evaluation report by our range faculty; an inspection visit to the MSU campus by a team of SRM representatives; and reviews by the SRM Accreditation Panel and finally the SRM Board of Directors. MSU now joins 11 other SRM-accredited academic programs in North America. Thank you to the many alumni and friends of our department who took time out of their busy schedules to meet with the SRM Visitation Team. Thank you also to MSU President Waded Cruzado, Provost Martha Potvin, Associate Provost Ron Larsen, College of Agriculture Vice President, Dean & Director Charles Boyer, and College of Agriculture Assistant Dean Nora Smith for their support and for making the financial investment needed to achieve accreditation. Our program will be reviewed for re-accreditation in 2021.



## Other News (continued)

A research video was recently produced covering the Sustainable Agriculture Research & Education (SARE) project titled *Collaborative Grazing for Sage-Grouse: Centennial Valley*. This video features Dr. Bok Sowell along with his graduate students Sean Schroff and Kyle Cutting. You can view this video at: <https://www.youtube.com/watch?v=TOx4P6Vant0>

### ANSC 322 in new TEAL classroom

In 2014, MSU won the innovation in teaching technology award from the Northwest Academic Computing Consortium for the use of technology-enhanced active learning, or TEAL, classrooms. Since then, the design and use of MSU's TEAL classrooms has increased student participation and engagement with course content and increased student success. In Fall 2015, the newest TEAL classroom in Cheever hall opened. This classroom seats 63 students and allowed Dr. Jennifer Thomson to pilot a new approach to teaching ANSC 322, Principles of Genetics and Animal Breeding.



TEAL classrooms are a unique learning environment where there is no podium. Dr. Thomson moves among teams of nine students sitting at one of 7 round networked tables. The tables are designed to maximize student collaboration, and are linked to wall-mounted screens or monitors around the classroom where the students work can be displayed and shared with the class. In addition to the environment, the class has been re-designed so that course content is provided outside of class in the form of assigned readings, and electronic presentations that the students access and the classroom time is spent on application of that material in the form of case studies, activities, and simulations of animal breeding scenarios.

## Facebook

We would like to invite you to "Like us" on Facebook and keep up with the latest postings on the Department of Animal 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:

Kevin Brown  
 Director of Development  
 MSU - College of Agriculture  
 Alumni Foundation, FD 225  
 Bozeman, MT 59717  
 PH: 406-994-4815  
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[www.animalrange.montana.edu](http://www.animalrange.montana.edu)



*Animal Bioscience Building*

