A Note from Our Department Head

Please enjoy perusing this fall’s departmental newsletter, which highlights some of our many research, teaching, and service pursuits. We currently enroll 136 undergraduate students, 76 M.S. students, and 27 Ph.D. students. We want to congratulate our graduates who have completed their studies this fall. Best wishes to you in your future endeavors!

*Tracy Sterling, Professor & Department Head*

New Faculty Member

**Dr. Scott Powell, Assistant Professor of Geospatial Sciences**

It might come as a surprise to some of you that I am a “new” faculty member in LRES. After all, I have been at MSU since 2000, first as a graduate student in Ecology, and then as a research faculty member in the department from 2009 onwards. But yes, I am now a tenure-track faculty member, and I’m really eager to get started!

My personal background includes growing up in Connecticut and heading “west” to attend college at Macalester College in St. Paul, MN. Following undergrad, I volunteered for AmeriCorps in Vermont and the Student Conservation Association in Texas, and then went back to graduate school for a Master’s degree in Environmental Management from Duke University. After that, I worked as a GIS analyst for the Forest Service at the Rocky Mountain Research Station in Fort Collins, CO, which eventually led me to Bozeman where I completed my Ph.D. in Ecology focusing on remote sensing of forest dynamics in the Yellowstone region. Apart from a three-year postdoc with the Forest Service at the Pacific Northwest Research Station in Corvallis, OR, I’ve been at MSU ever since.

My research interests revolve around characterizing landscape and vegetation patterns to improve understanding of the drivers and ecological consequences.
LRES Recognition

Jim Bauder, professor emeritus, Stephanie Ewing, Tony Hartshorn, Cathy Zabinski, and alum Russell Smith (not pictured) have contributed to the research surrounding the reclamation at Hailstone National Wildlife Refuge. The reclamation project commenced in 2011 when the federal government removed the earthen dam that contributed to high selenium concentrations in Hailstone NWF’s reservoir.

Jane Mangold and Fabian Menalled, along with their colleagues in the MSU Extension Climate Science Initiative Working Group, received the Visionary Leadership Award from the Montana chapter of Epsilon Sigma Phi, a national fraternity for Extension educators.

Perry Miller joined the ranks of a select 0.3 percent of American Society of Agronomy (ASA) active and emeritus members when he was named an ASA Fellow. He was recognized during the society’s International Annual Meeting in November.

Rob Payn published a primary-authored paper titled “A generalized optimization model of microbially driven aquatic biogeochemistry based on thermodynamic, kinetic, and stoichiometric ecological theory” in Ecological Modeling. Geoff Poole co-authored the paper. The paper is available online at www.sciencedirect.com.

Bob Peterson received the 2014 Distinguished Alumnus Award from the Lawrence Brunner Entomology Club at University of Nebraska, Lincoln, where he earned both his master’s and doctoral degrees in Entomology. Peterson was also named “Most Valuable Professor” at the October 3rd Bobcats football game.

John Priscu co-authored a breakthrough paper on WISSARD’s discovery of the first direct evidence of life in subglacial lakes in Antarctica. The paper was published in the August 21, 2014 edition of Nature. Various news sources across the country published reports, and CBC’s (Canada) radio science program featured an interview with Priscu. Priscu was also awarded the Edward O. Wilson Biodiversity Technology Pioneer Award for his contributions to science.

Alex Michaud, a graduate student, published a primary-authored paper titled “Biological ice nucleation initiates hailstone formation” in the Journal of Geophysical Research: Atmospheres. His research was sparked by the devastating hailstorm that hit Bozeman in June 2010.

David Weaver was inducted into the National Association of Inventors (NAI). He and other MSU inductees were recognized in a ceremony held at MSU in September.

Paul Stoy co-authored the paper. The paper is available online at www.agu.org.

Melody Schimpf, fiscal manager, attended a national conference in Reno, NV on grants and procurements rules and procedures.

Linda McDonald, Academic Programs Coordinator, was nominated for the Academic Advising Award through the Center for Faculty Excellence.

Patrick Lawrence, a graduate student, earned an Institute on Ecosystems fellowship to lead a summer science internship at Chief Dull Knife College in Lame Deer, MT. See “Ecology, History, and Culture” on page 5.

John Priscu (pictured previously) and John Dore are among the co-authors.

Get department news first. Follow us on Facebook to see press releases, seminar announcements, other student and faculty news and reminders, and photos of department events.

Undergraduates Receive IoE Summer Internships

Three undergraduate students received summer internships with the Institute on Ecosystems to conduct research:

Erik Anderson: using water isotopes to link water and solute movement in cultivated and uncultivated soils - Judith Basin. Erik is majoring in Soil and Water Science and was advised by Stephanie Ewing.

Noelani Boise: assessing the effect of change in temperature and precipitation of change. An example of this from my current work is mapping forest disturbance dynamics (e.g., fire, insects, and harvest) across the United States and modeling the associated changes in forest biomass.

In particular, I examine the dynamics of carbon sources and sinks across space and time within diverse systems, from forest ecosystems to agricultural systems, as well as engineered geologic sequestration sites. A core theme of my research is the utilization of geospatial data and tools (e.g., remote sensing, GIS, and GPS) to develop monitoring systems at multiple scales for a wide variety of applications in environmental science.

On the teaching front, I am currently the Program Coordinator for the online M.S. in LRES program. My responsibilities in this position include teaching one course per semester (Landscape and Ecosystem Ecology; Remote Sensing Applications in Environmental Science), advising graduate students, providing programmatic and curricular oversight, and coordinating teaching efforts within the program, and serving as a point of contact between LRES and Extended University. In addition, I co-teach an undergraduate Honors seminar that deals with climate change science and policy. Starting next year I will also contribute to co-teaching an undergraduate LRES course (ENSC 110) as well as a new graduate course.

I’m really excited about my “new” start in LRES. We are such a diverse and unique department, and I feel right at home here and grateful for the opportunity to contribute.

New Faculty Member: Scott Powell

New LRES Staff

Jake Colberg joined LRES in September. He works part-time to provide IT support to the department. He is an undergraduate studying Computer Science.

Katie Fogg graduated from the Ecology department with a B.S. in Biological Sciences: Organismal Biology in Summer 2013. Katie works in the Fluvial Landscape Lab as a Research Associate.

John Long completed his Ph.D. in Ecology and Environmental Sciences in Spring 2014. He is now working as a Research Scientist in the Spatial Sciences Lab.

George Schaible joined LRES in the summer of 2014. He graduated from the Microbiology department with a B.S. in Biotechnology, as well as minors in Astrobiology and Biochemistry. He works as a Research Associate in Dave Ward’s lab.

Julie Witte works at the front desk in the administrative office. She joined LRES in May 2014. She is originally from Bowmanville, Ontario, Canada and holds a B.A. in General Studies: Language and Linguistics from Dordt College in Sioux Center, Iowa.

John Long held at MSU in September. Inductees were recognized in a ceremony on October 3rd Bobcats football game. Bob Peterson was named “Most Valuable Professor” at the October 3rd Bobcats football game.

Jane Mangold and Fabian Menalled, along with their colleagues in the MSU Extension Climate Science Initiative Working Group, received the Visionary Leadership Award from the Montana chapter of Epsilon Sigma Phi, a national fraternity for Extension educators.

Perry Miller joined the ranks of a select 0.3 percent of American Society of Agronomy (ASA) active and emeritus members when he was named an ASA Fellow. He was recognized during the society’s International Annual Meeting in November.

Rob Payn published a primary-authored paper titled “A generalized optimization model of microbially driven aquatic biogeochemistry based on thermodynamic, kinetic, and stoichiometric ecological theory” in Ecological Modeling. Geoff Poole co-authored the paper. The paper is available online at www.sciencedirect.com.

Bob Peterson received the 2014 Distinguished Alumnus Award from the Lawrence Brunner Entomology Club at University of Nebraska, Lincoln, where he earned both his master’s and doctoral degrees in Entomology. Peterson was also named “Most Valuable Professor” at the October 3rd Bobcats football game.

John Priscu co-authored a breakthrough paper on WISSARD’s discovery of the first direct evidence of life in subglacial lakes in Antarctica. The paper was published in the August 21, 2014 edition of Nature. Various news sources across the country published reports, and CBC’s (Canada) radio science program featured an interview with Priscu. Priscu was also awarded the Edward O. Wilson Biodiversity Technology Pioneer Award for his contributions to science.

Alex Michaud, a graduate student, published a primary-authored paper titled “Biological ice nucleation initiates hailstone formation” in the Journal of Geophysical Research: Atmospheres. His research was sparked by the devastating hailstorm that hit Bozeman in June 2010.

David Weaver was inducted into the National Association of Inventors (NAI). He and other MSU inductees were recognized in a ceremony held at MSU in September.

Paul Stoy co-authored the paper. The paper is available online at www.agu.org.

Melody Schimpf, fiscal manager, attended a national conference in Reno, NV on grants and procurements rules and procedures.

Linda McDonald, Academic Programs Coordinator, was nominated for the Academic Advising Award through the Center for Faculty Excellence.

Patrick Lawrence, a graduate student, earned an Institute on Ecosystems fellowship to lead a summer science internship at Chief Dull Knife College in Lame Deer, MT. See “Ecology, History, and Culture” on page 5.

John Priscu (pictured previously) and John Dore are among the co-authors.

Get department news first. Follow us on Facebook to see press releases, seminar announcements, other student and faculty news and reminders, and photos of department events.

Undergraduates Receive IoE Summer Internships

Three undergraduate students received summer internships with the Institute on Ecosystems to conduct research:

Erik Anderson: using water isotopes to link water and solute movement in cultivated and uncultivated soils - Judith Basin. Erik is majoring in Soil and Water Science and was advised by Stephanie Ewing.

Noelani Boise: assessing the effect of change in temperature and precipitation of change. An example of this from my current work is mapping forest disturbance dynamics (e.g., fire, insects, and harvest) across the United States and modeling the associated changes in forest biomass.

In particular, I examine the dynamics of carbon sources and sinks across space and time within diverse systems, from forest ecosystems to agricultural systems, as well as engineered geologic sequestration sites. A core theme of my research is the utilization of geospatial data and tools (e.g., remote sensing, GIS, and GPS) to develop monitoring systems at multiple scales for a wide variety of applications in environmental science.

On the teaching front, I am currently the Program Coordinator for the online M.S. in LRES program. My responsibilities in this position include teaching one course per semester (Landscape and Ecosystem Ecology; Remote Sensing Applications in Environmental Science), advising graduate students, providing programmatic and curricular oversight, and coordinating teaching efforts within the program, and serving as a point of contact between LRES and Extended University. In addition, I co-teach an undergraduate Honors seminar that deals with climate change science and policy. Starting next year I will also contribute to co-teaching an undergraduate LRES course (ENSC 110) as well as a new graduate course.

I’m really excited about my “new” start in LRES. We are such a diverse and unique department, and I feel right at home here and grateful for the opportunity to contribute.

New Faculty Member: Scott Powell

New LRES Staff

Jake Colberg joined LRES in September. He works part-time to provide IT support to the department. He is an undergraduate studying Computer Science.

Katie Fogg graduated from the Ecology department with a B.S. in Biological Sciences: Organismal Biology in Summer 2013. Katie works in the Fluvial Landscape Lab as a Research Associate.

John Long completed his Ph.D. in Ecology and Environmental Sciences in Spring 2014. He is now working as a Research Scientist in the Spatial Sciences Lab.

George Schaible joined LRES in the summer of 2014. He graduated from the Microbiology department with a B.S. in Biotechnology, as well as minors in Astrobiology and Biochemistry. He works as a Research Associate in Dave Ward’s lab.

Julie Witte works at the front desk in the administrative office. She joined LRES in May 2014. She is originally from Bowmanville, Ontario, Canada and holds a B.A. in General Studies: Language and Linguistics from Dordt College in Sioux Center, Iowa.
LRES Hosts 11th Annual Crops and Weeds Field Day at the Post Research Farm

On July 8, more than 130 farm managers, crop advisors, students, and researchers visited the Montana State University’s Post Research Farm to learn about ongoing crop and weed research programs at MSU. This is our 11th Crops and Weeds Field Day and this year it was organized in conjunction with the Western Society Crop Science conference held in Bozeman.

This year’s speakers were Jane Mangold, Fabian Menalled, Ed Davis, Erik Lehnhoff, and Erin Burns on weed management; Alan Dyer on cereal pathogen, Chengci Chen on pulse crop production, Kent McVay on crop rotations, Hilary Parkinson and Eva Grimme on pest identification, and Luther Talbert on spring wheat breeding.

LRES also co-hosted a discussion with former rear admiral David Titley on climate change, agriculture, and national security.

As always, registration was free and LRES co-sponsored with PSPP to provide refreshments, breakfast, and lunch.

Bozeman Magazine Features GPS Class’ Service-Learning Project

The Spring 2014 edition of the LRES Newsletter included recognition of Diana Cooksey’s receipt of the President’s Award for Excellence in Service Learning for her E-911 mapping project.

Cooksey’s TA, Danielle Martin, submitted an article on the project to Bozeman Magazine. The article highlights the project’s value, both to students as they learn GPS and GIS mapping technology and apply it to real-world situations, and also to the City of Bozeman, whose firefighters use the students’ maps to locate the scene of an emergency more efficiently, particularly in high-density residential developments.

The article is available at www.bozemanmagazine.com; search for “Service Learning 101.”

Research in Pictures

On July 8, more than 130 farm managers, crop advisors, students, and researchers visited the Montana State University’s Post Research Farm to learn about ongoing crop and weed research programs at MSU. This is our 11th Crops and Weeds Field Day and this year it was organized in conjunction with the Western Society Crop Science conference held in Bozeman.

This year’s speakers were Jane Mangold, Fabian Menalled, Ed Davis, Erik Lehnhoff, and Erin Burns on weed management; Alan Dyer on cereal pathogen, Chengci Chen on pulse crop production, Kent McVay on crop rotations, Hilary Parkinson and Eva Grimme on pest identification, and Luther Talbert on spring wheat breeding.

LRES also co-hosted a discussion with former rear admiral David Titley on climate change, agriculture, and national security.

As always, registration was free and LRES co-sponsored with PSPP to provide refreshments, breakfast, and lunch.

Bozeman Magazine Features GPS Class’ Service-Learning Project

The Spring 2014 edition of the LRES Newsletter included recognition of Diana Cooksey’s receipt of the President’s Award for Excellence in Service Learning for her E-911 mapping project.

Cooksey’s TA, Danielle Martin, submitted an article on the project to Bozeman Magazine. The article highlights the project’s value, both to students as they learn GPS and GIS mapping technology and apply it to real-world situations, and also to the City of Bozeman, whose firefighters use the students’ maps to locate the scene of an emergency more efficiently, particularly in high-density residential developments.

The article is available at www.bozemanmagazine.com; search for “Service Learning 101.”

Professional Spotlight

Megan Hofland, Research Associate in the Weaver Lab

A fifth generation Montanan, I grew up in the foothills of the Little Belt Mountains, and I moved to Bozeman in 1998 to study biology. I began working in Dr. David Weaver’s lab in 1999 and have spent the subsequent 15 years working on plant/insect interactions, primarily focused on the wheat stem sawfly and its associated impacts on the state’s cereal crops.

Research in the lab involves the collection and evaluation of plant, insect, and chemical samples. I troubleshoot, maintain, and train others to use a Volatile Collection System, GC/MS, GC/FID, and Y-tube Olfactometer. These equipment are used to collect and evaluate chemical samples, then investigate the role of the compounds on insect behavior.

I came to the Gallatin Valley to go to college, and I stayed, because I love the area. Like many here, I spend my spare time outdoors hiking and camping with my family. I appreciate the opportunities that my employment at MSU has provided: challenging research projects and ample opportunity for recreation.

Megan Hofland
We'd love to hear from you!
If you are (or once were) a faculty member, staff member, or student and wish to share your research and/or professional accomplishments in an upcoming newsletter, please contact:

- Tracy Sterling, Department Head, tracy.sterling@montana.edu
- Julie Witte, Administrative Associate, 1resfrontdesk@montana.edu

SFBS Students Experience Agriculture in the Atlas Mountains of Morocco

In 2014 students from the SFBS (Sustainable Food and Bioenergy Systems) program traveled to the rural community of Zawija Ahansal in the Atlas Mountains of Morocco to engage with local people and learn about their agriculture and nutrition. The course is run in cooperation with the Atlas Cultural Foundation, a Livingston-based community development non-profit that has worked in Zawija Ahansal since 2006. The students traveled with Dr. Tim Seipel from the Land Resources and Environmental Sciences department and Dr. Carmen Byker from the Health and Human Development department.

During the trip, students learned about cropping systems, area soils and climate, and worked with locals in their gardens to produce food that was ultimately distributed to locals in need. Through community events, students also learned about the diets and nutrition of locals, where the food is produced, and how food is stored and handled.

The agriculture in Zawija Ahansal consists of growing vegetables and other crops on flood-irrigated, terraced fields in river flood plains, and grazing sheep and goats in mountain pastures. The main crops are six-row barley, alfalfa, and corn, all of which are used for animal fodder.

The course will be offered again in 2015, and students will engage with the community on a variety of issues including pest-management, and trials with vegetable crops to improve local nutrition. For more information, or to download application materials, visit http://www.atlasculturaladventures.com.

Ophir School 2nd Graders Brush Up on Weed ID and Participate in Weed Pull

What do you get when you have 35 pairs of small gloves, Montana Noxious Weed ID booklets, massive black garbage bags, shovels and 35 weed savvy 2nd graders? The annual Ophir 2nd grade weed pull at the Big Sky Community Park in Big Sky, Montana! Every fall, Ophir Elementary School 2nd grade teacher Brittany Shirley teaches her class how to identify Montana’s noxious weeds, why students should care about them, and what they can do to help control these invasive plants. Then a field trip is arranged, chaperones and volunteers are contacted and a date is set for the weed pull. This year, the event took place on October 6th, and I had the pleasure of being one of those volunteers who participated.

I am the Project Coordinator for the Montana Noxious Weed Education Campaign (MNWEC), a partnership among multiple federal, state, and country agencies, non-governmental and educational organizations, and private citizens that is housed within the LRES Department. One of my duties is to help organize and participate in educational events that focus on noxious weeds, such as the Ophir 2nd grade weed pull. MNWEC’s mission is, “To educate the people of Montana about the economic and environmental impacts of noxious weeds while encouraging the public to participate in ecologically based Integrated Weed Management.”

The morning started out with the Gallatin/Big Sky Weed Coordinator, Jen Mohler, giving a brief presentation to the kids about the weeds they might find around the park as well as why it’s important to always check your shoes and clothes after recreating to help stop the spread of weed seeds that may have hitched a ride on you. Then the fun began; the kids were put in teams with chaperones, given gloves, a GPS unit, black garbage bags and sent on their way! Once a weed was found, the group would identify it and map it using a GPS unit. The maps generated by the students’ work will be used to monitor and apply follow-up treatments as necessary next spring. The group then worked to pull, dig and bag the weeds that were found. Species found around the park included Dalmatian toadflax, oxeye daisy, hoary alyssum and musk thistle. Not only were the kids learning and pulling, the adult chaperones and parents were doing the same!

The weed pull was a great success as evidenced by 300-350 pounds of weeds that were collected in just a few short hours. Prevention is key when it comes to noxious weeds, and these types of events are a great way to raise community awareness about noxious weeds. By involving youth and their parents, events like these foster an understanding of natural resources and encourage active participation in weed management efforts.

Shantell Frame-Martin, Project Coordinator for the Montana Noxious Weed Education Campaign

These funds fuel our research and teaching mission - to discover new knowledge, to engage and train students using laboratory and field studies across local to global scales, and to enrich the lives of Montanans. Please take a minute to congratulate our faculty and staff on their meaningful work and impressive accomplishments.

Agency & (Co)PI Title

Montana Grants

Montana Department of Agriculture
Mangold Montana Nuisious Weeds Education Campaign
Mangold Predicting Plant Community Response to Weed Control: When is Revegetation Necessary?

Montana Department of Environmental Quality
Ewing, Harthorn Story Mill Site Wetland Restoration Monitoring

Montana Fertilizer Tax Fund
Chen, Engel Investigating Crop Nitrogen Uptake as Affected by Cropping Systems and Management Strategies
Ewing, Jones, Brookshire Research Analytical Chemist, Environmental Analytical Laboratory
Jones, Miller Determining the Long-Term Effects of Diversified No-Till Cropping Systems on Nutrient Uptake and Availability
Maxwell, Jones, Jenson, Barroso, et al. Impact of Precipitation and Temperature on Nitrogen Fertilizer Management
Miller, Jones, Bekkerman, et al. Long-Term N Management in Alternative Crop Rotations
Walsh, Miller Evaluation of Urea-Potassium Chloride Blend and Residue Management in Spring Wheat
Walsh, Miller Plant Population and N Application Time for Improved Spring Wheat Production
Walsh, Miller Potassium Management for Improved Dryland Spring Wheat Grain Yield and Quality
Walsh, Miller Unmanned Aerial Systems for Precision Crop Sensing
Weaver Influence of Nitrogen on Wheat Stem Sawfly Parasitoid Numbers in Hollow and Solid Stem Spring Wheat

Montana Nuisious Weed Trust Fund
Lehnoff, Mangold, Menalled, Understanding and Mitigating the Impact of Cheatgrass Under a Changing Climate
Row, Stetzel
Littlefield Biological Control of Common Tansy and Oy-Eye Daisy
Littlefield Biological Control of Invasive Hawkweeds
Littlefield Biological Control of Russian Knaweed
Littlefield Biological Control of Whitetop
Mangold Montana’s Nuisious Weeds Mobile App
Maxwell Patterns and Mechanisms of Cheatgrass Invasion in the Northern Great Plains
Weaver Biocontrol of Invasive Towelax Using Stem Inhibiting Weevils

Montana Wheat & Barley Committee
Jones, Miller, Zabinski Evaluations of Winter and Spring Wheat Performance and Associated Soil Health Measurements Following Cover Crop Cocktails
Maxwell, Littlefield, Menalled Ecological Management of Field Bindweed (Convolvulus arvensis) in Cereal Systems
Menalled, Davis Control of Glyphosate Resistant in Fallow with Soil Active Herbicides
Menalled, Mangold Integrated Management of Bromus tectorum in Winter Wheat: Incorporating a Soil-Borne Fungal Pathogen
Miller Legacy Effects of Long-Term Diversified Cropping Systems
Stoy, Ewing, Miller Are There Any Hydrologic Benefits to Fallow? Quantifying Water Use in Montana Wheat Fields and Designing Strategies for Avoiding Fallow when Unnecessary
Weaver Implementation of Wheat Stem Sawfly IPM
Weaver Parasitoids of the Wheat Stem Sawfly: Augmentation, Validation and Education

Federal Grants

USDA Agriculture and Food Research Initiative
Littlefield The Role of Hybridization in Biological Control of Weeds

USDA Animal and Plant Health Inspection Service
Littlefield Biological Control Agents of Russian Knapweed: Conservation, Redistribution and Monitoring of Agents
Littlefield Biological Control of Orange Hawkweed
Weaver Collection of the Stem-Mining Weevil, Mecinus janthinus German for Redistribution on Yellow Towelax Species

USDA Bureau of Land Management
Mangold, Menalled Biological Control and Integrated Management of Invasive Annual Grasses
Mangold Montana Nuisious Weeds Education Campaign
Weaver Biological Weed Research in Montana

US Department of Energy
Stoy Bridging Land-Surface Fluxes and Aerosol Concentrations to Triggering Convective Rainfall

US Fish and Wildlife Service
Goodwin Invasive Species Management Contributions to Greater Sage-Grouse Conservation

US Geological Survey
Stoy Improving Accessibility to Satellite Soil Moisture Measurements: Linking SMOS Data Retrievals to Ground Measurements in Montana

National Park Service
Sigler, Kaylor Water Resource Monitoring: Greater Yellowstone Network Parks

National Science Foundation
Harthorn, Stoy UTRAC: Using Technology to Research After Class
McDermott A Cellular Systems Analysis of Microbe-Arsenic Interactions
McDermott Institute on Ecosystems - INSTEP Year 3
Poole Institute on Ecosystems - INSTEP Year 3
Priscu, Michaud Microbial Carbon Cycling Beneath the West Antarctic Ice Sheet
Priscu Whillams Ice Stream Subglacial Access Research Drilling: Integrative Study of Marine Ice Sheet Stability and Subglacial Life Habitats in West Antarctica

Private, University, Regional, and Other State Grants

America View Inc.
Deagan, Sterling Proposal to Provide Program Director Services to AmericaView
Lawrence State/View Program Development and Operations for the State of Montana

Confederated Tribes of the Umatilla Indian Reservation
Poole Detecting Hypoxic Influences on Whole Stream Temperature Pattern

Dow AgroSciences LLC
Peterson Assessing Efficacy, Exposure, and Risk for Pesticide Dftrif Reduction Technologies

Koch AgroNomic Services
Engel Effect of Atrazine on NH3 Volatilization, N Recovery, Yield, and Protein Response of Dryland Winter Wheat to Urea Applied during Cold Weather Months

Montana Weed Control Association
Mangold Nuisious Weed Listing Research

Northern Pulse Growers Association
Davis, Menalled Evaluation of Burnstow Efficacy and Premergence Grass on Broadleaf Weed Control in Pulse Crops
Miller Exploring the N Fixation Potential of Small-Seeded Fababeans

Organic Advisory and Educational Services
Menalled, Mangold, Orloff A Meta-Anaalyis of Previous Canada thistle (Cirsium arvense) Control and Management Studies
Menalled, Mangold, Orloff A Meta-Anaalyis of Previous Field Bindweed (Convolvulus arvensis) Control and Management Studies

Pacific Northwest National Labs
Inskeep PNNL Joint Appointee (Senior Research Scientist)
Enrollment in Online Master’s Program Sees Rapid Growth

“More than 50 students are pursuing a master’s degree in environmental sciences through an online program at Montana State University. The fact that the program is only two years old and its enrollment is growing so quickly shows that the program is meeting a need, said program founder and director Bob Peterson, LRES Professor of Entomology. He thought it might take four years to reach that milestone.

The online program offers 15 MSU courses and the opportunity to participate in independent study and internships. Thirteen faculty members teach these online courses. Students spend time reading and participating in online discussions. They [write] a professional paper based on research or original data. Depending on their course load, work ethic, and what’s going on in the rest of their lives, they can graduate in two years.

Carla Rickert, who is from the Sioux Falls, S.D. area and lives in Florida for part of the year, is one of the three students who have graduated so far from the master’s degree program. ‘I have dreamed about getting my graduate degree for many years,’ Rickert said.

‘The online LRES program gave me the opportunity to accomplish this dream.’ Current student Shae Allen said he learned about MSU’s program while searching for a master’s program that emphasized land management practices and could be completed online. He is serving in the military and has lived in Japan for the past two years. One component he found particularly attractive was that [the program] offered students the opportunity to attend five-to-14-day courses on campus during the summer. He plans to use his master’s degree education to pursue a career in an environmental or land management field, preferably in the National Park Service.”

Excerpt from MSU News article dated 9-9-14 by Evelyn Buswell

New LRES Graduate Students

Spring 2014

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Advisor(s)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marianne Alford</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Baton Rouge, LA</td>
</tr>
<tr>
<td>Abdullah Alowaifeer</td>
<td>Ph.D. ECES</td>
<td>Advisor: McDermott</td>
<td></td>
</tr>
<tr>
<td>Autumn Coleman</td>
<td>M.S. LRES</td>
<td></td>
<td>Helena, MT</td>
</tr>
<tr>
<td>Shannon Crosser</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Costa Mesa, CA</td>
</tr>
<tr>
<td>Kelly Dalton</td>
<td>M.S. LRES Online</td>
<td>Advisor: Ramirez</td>
<td>Irvine, CA</td>
</tr>
<tr>
<td>Sara Drane</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Tucson, AZ</td>
</tr>
</tbody>
</table>

Fall 2014

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Advisor(s)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benjamin Fournier</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Fredericksburg, VA</td>
</tr>
<tr>
<td>Rebecca Hooley</td>
<td>M.S. LRES Online</td>
<td>Advisor: Chilcote</td>
<td>Colorado Springs, CO</td>
</tr>
<tr>
<td>Megan Housman</td>
<td>M.S. LRES</td>
<td>Advisor: Zabinski</td>
<td></td>
</tr>
<tr>
<td>Amanda MacPherson</td>
<td>M.S. LRES Online</td>
<td>Advisor: Wysong</td>
<td>York, PA</td>
</tr>
<tr>
<td>Gant Massey</td>
<td>M.S. LRES Online</td>
<td>Advisor: Zabinski</td>
<td>Hamilton, MT</td>
</tr>
<tr>
<td>Robert Mediak</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Stevensville, MT</td>
</tr>
<tr>
<td>Carlos Romero</td>
<td>M.S. LRES</td>
<td>Advisor: Engel &amp; Chen</td>
<td></td>
</tr>
<tr>
<td>Jennifer Schmitz</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Seattle, WA</td>
</tr>
<tr>
<td>Aaron Scott-Klingborg</td>
<td>M.S. LRES</td>
<td>Advisor: Brookshire</td>
<td></td>
</tr>
<tr>
<td>Angela Tang Che Ing</td>
<td>Ph.D. ECES</td>
<td>Advisor: Stoy</td>
<td></td>
</tr>
<tr>
<td>Robert Kellin</td>
<td>M.S. LRES Online</td>
<td>Advisor: Payn</td>
<td>Norahs, MN</td>
</tr>
<tr>
<td>Emily Lankus</td>
<td>M.S. LRES Online</td>
<td>Advisor: Rew</td>
<td>Athens, GA</td>
</tr>
</tbody>
</table>

Fall 2014

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Advisor(s)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew Bobst</td>
<td>Ph.D. ECES</td>
<td>Advisor: Payn</td>
<td></td>
</tr>
<tr>
<td>Keenan Brame</td>
<td>Ph.D. ECES</td>
<td>Advisor: McDermott &amp; Camper</td>
<td></td>
</tr>
<tr>
<td>Rebecca Hollender</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Maplewood, NJ</td>
</tr>
<tr>
<td>Jeri Irby</td>
<td>M.S. LRES Online</td>
<td>Advisor: Prisu</td>
<td>Powell, OK</td>
</tr>
<tr>
<td>Robert Kellin</td>
<td>M.S. LRES Online</td>
<td>Advisor: Rew</td>
<td></td>
</tr>
<tr>
<td>Emily Pierson</td>
<td>M.S. LAND</td>
<td>Advisor: Payn</td>
<td></td>
</tr>
<tr>
<td>Zev Reuter</td>
<td>M.S. LRES Online</td>
<td></td>
<td>Cold Spring, NY</td>
</tr>
</tbody>
</table>

Powell Attends Distance Education Conference

I recently had the opportunity to attend the 36th Annual Conference on Distance Teaching and Learning hosted by the University of Wisconsin, Madison. Not only was it an incredible conference venue on the shores of Lake Monona right next to the state capitol, but the conference provided me with an excellent opportunity to compare and contrast our unique online MS program in LRES with other online programs around the country and to learn about best practices in distance education. The biggest take-home message for me was that our new and growing program is on the right track. In this era of Massive Open Online Courses (MOOCs), our program is striving for something quite the opposite—the “localization” of online education. Our students are attracted to MSU and LRES because we offer small, interactive, locally-tailored classes. This is a unique strength of our program and helps set us apart in the ever-changing, and rapidly expanding world of distance education.

Scott Powell

Research in Pictures

A view of the WI Capitol Building

Photo: Scott Powell

Prof. Bruce Maxwell and graduate student Kim Taylor on a research project in Bariloche, Argentina

ECES: Ecology & Environmental Studies
LAND: Land Rehabilitation
LRES: Land Resources & Environmental Sciences
We thought this would be a good opportunity to give an update on the LRES Graduate Student Organization (GSO). First off, new members of LRES might appreciate knowing what we as the GSO do. The role of the GSO is to facilitate networking opportunities for LRES grad students by organizing student activities and providing an interface with faculty. The main event that the GSO organizes is the annual LRES Research Colloquium which gives students an opportunity to present on their projects. Other important activities include social events and volunteering and community service involvement.

As we reflected on our new roles as co-chairs we thought about what it means to be in the LRES community and how the GSO can promote that sense of community. In an article about sense of community, McMillan and Chavis described a person’s perception of community as being composed of four main elements. Membership is what you feel when you “belong” because you relate with your peers. Influence makes you feel like you matter because you can make a difference within the group that you belong. Fulfillment of needs is the reward you get for your membership. And having a shared emotional connection comes from having a common goal and going through similar experiences to reach it. A fundamental aspect of maintaining and promoting the four elements of community within the graduate students of LRES is member participation. So we’ll look forward to seeing you at GSO events and please let us know if you have ideas on how the GSO can better promote community among the LRES grad students. Maybe most important is how can the GSO contribute towards our common goal of being successful graduate students? Feel free to contact us at lresgso@gmail.com.

The next GSO event will be a happy hour in mid-November at a nearby location. Look for an email reminder from Stephen Johnson through the LRES front desk. Also, planning has already started for the LRES Research Colloquium which will be held in a SUB ballroom in April. Start thinking now about presentation ideas for the Colloquium. The Colloquium provides a great opportunity for people to get some exposure within LRES, practice presenting in an informal setting, and get the word out on your project. Let your fellow grad students know what it is that you have been pouring your heart and soul into!

Collin Prefauts & Chris Brown

14/15 GSO Officers

- Collin Prefauts, Co-chair
- Chris Brown, Co-chair
- Nar Ranabhat, Curriculum Committee Liaison
- Stephen Johnson, Faculty/Staff Social Committee Leader
- Subodh Adhikari, Mentoring Committee Liaison

How many of you outdoor-types have coveted one of those space-age, ultra-rugged, ultra-insulated coolers on the market today? With an asking price of $400 or so, the coolers promise to keep contents colder, for longer! Recently, the Montana State Fluvial Landscape Lab has been putting a couple of coolers through a battery of rigorous tests. The tests are part of an ongoing research project studying how the shape of a river channel can influence river temperature.

Amazingly, it’s true. Our research is helping to reveal how river-bends, side channels, and complex streambed topography can all encourage river water to enter, flow through, and re-emerge from streambed gravels, ultimately changing temperature patterns in rivers. So what do coolers have to do with river temperature? Well, lab researchers have been putting a couple experimental coolers – to predict daily variation in water temperature in the coolers. We have other sensors recording water temperature in the coolers. If the temperatures predicted by the model are correct. When our model successfully predicts water temperature in the coolers, we know it is simulating heat exchange between the atmosphere and water correctly. Then, we can combine this atmospheric model with a model that simulates downstream heat movement (with river flow), and a model that simulates heat movement into and out of the streambed. This way, we get a complete picture of the heat exchange processes controlling temperature dynamics in streams.

So what’s that you say? The coolers? Oh right...

If you need a really rugged, portable storage box, the $400 coolers might be worth it. But as far as our tests show, a $60 “extreme” cooler is just about as effective at keeping things cold. Go figure.

Geoffrey Pooler directs the Montana State Fluvial Landscape Lab, where researchers study how water movement across floodplains, within stream corridors, and throughout river networks influences the ecology of running waters.
LRES 2014-2015 Scholarship Recipients

Aasheim Family Leadership Scholarship
Nathaniel Powell-Palm

Battle Ridge Ranch Scholarship
Hailey Gelzer
Kaylee Schmitz

Bill & Anita Jones Agricultural Scholarship
Talinna Appling
Katie Noland

Thomas D. Campbell Memorial Scholarship
Jacklynn Lathrop
Dionne Zoanni

Donaldson Family Memorial Scholarship
Tucker Colvin

Clyde & Helen Erskine Excellence in Ag Scholarship
Nicholas Uehling

MSU Farmhouse Alumni Scholarship
Sarah Spear

First Security Bank Scholarship
Talinna Appling

Marion T. Hedegaard Scholarship
Dionne Zoanni

Koebel Family Scholarship
Jessica Chrisp
Laura Mooney

Land Resources Stewardship Scholarship
Russell Callahan
Tucker Colvin
Madison McKinstry
Kaylee Schmitz
Taylor Westhusin

Cliff Montagne LRES Scholarship
Erik Anderson

Montana Winter Fair Ag Scholarship
Jacklynn Lathrop
Sarah Spear

Frank F. Munshower Scholarship in Land Rehabilitation
Andrew John

Newman/Abbott Nutrition Undergraduate Scholarship
Kendall Franks

Newman Family & Friends Scholarship
Subodh Adhikari
Krista Ehlert

Dr. Arthur H. Post & Margaret Post Scholarship
Sarah Spear

Rice Family Scholarship
Jeana Ratcliff

Wagner Heritage Scholarship
Dionne Zoanni

Opportunities to Support LRES

A gift to the department is a great way to support student and faculty endeavors. Donations can be earmarked for student scholarships or internships, graduate fellowships, undergraduate and graduate student programs, endowed professorships, and more. For information about making a donation to the Department, please contact Kevin Brown, MSU Alumni Foundation, College of Agriculture, Director of Development (406-994-4851 or kbrown@montana.edu).