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Newsletter LRES

Congratulations Graduates !

May 2010 ~ This LRES Newsletter Issue is dedicated to celebrating our outstanding students, staff, and faculty – all of whom make our teaching and research programs so successful. This past few months I have had the opportunity to visit the classrooms and teaching labs of our innovative and dedicated faculty and witnessed the breadth and depth of instruction as well as the impressive hands-on approaches used to prepare our students for their futures as professionals recognized for their expertise in the fields of land resources and environmental sciences. I hope you enjoy looking through this newsletter to see our students' many accomplishments as well as the many examples of excellence and classroom engagement in our department.



Students, my warmest regards to each and every one of you, and please stay in touch to let us know what great things you are doing. GO CATS!

~Tracy Sterling, Department Head, LRES

"Intellectual growth should commence at birth and cease only at death"
~ Albert Einstein

MSU Excellence Awards

Outstanding Performance and Contributions at Montana State University Recognized



Each year the MSU Employee Recognition Awards Program honors outstanding performance and contributions by Montana State University employees. LRES nominated Merry Pacey for this award to recognize her exceptional contributions. Merry's packet included over 60 signatures from LRES students, staff and faculty as well as multiple personal statements from individuals across the department explaining how she exemplifies an outstanding employee. She is the behind-the-scenes professional who orchestrates the mission of our department, the College of Agriculture and Montana State University. The department greatly appreciates her impeccable skill at professionally, graciously and effectively juggling so many individuals of varying needs, while coordinating the many aspects and personnel operations of the department. Merry's excellence was celebrated with other MSU employees from across campus at the annual ceremony on April 12.



Dr. Kevin O'Neill received two teaching awards this spring. Professor O'Neill received the Award for Excellence sponsored by the Alumni Association in February; recipients of this award are identified by MSU's 40 top seniors who each choose the faculty or staff person whom has served as a great inspiration and mentor during the student's time at MSU. Kevin will also receive the 2010 President's Excellence in Teaching Award at the May 7 Honors Night hosted by President Cruzado. Dr. O'Neill has been contributing to student success and instructional excellence at MSU for two decades, from freshman engagement to graduate student mentoring, as well as bringing innovative structural changes to the entire campus' curriculum through his leadership in developing the Core-2.0 Curriculum. The department is very fortunate to have such an outstanding educator.

LRES Club

Glass Recycling Project

The LRES club facilitated a very successful Earth Day glass recycling project April 22, 23 and 24th. The project consisted of collecting glass for recycling and took place on campus as well as Bogart Park.



LRES Recognition

A quick snapshot of LRES Faculty, Staff and Student awards, recognitions, honors, accomplishments and notices



John Dore coauthored a winning article explaining how the burning of fossil fuels has changed carbon dioxide levels in the ocean off Hawaii. He accepted the 2009 Cozzarelli Prize April 25 at the annual meeting of the National Academy of Sciences in National Harbor, Maryland. <http://www.montana.edu/cpa/news/nwview.php?article=8372>



Fabian Menalled and Tracy Sterling were recognized for earning tenure at President Cruzado's "Celebration of Tenure Ceremony" on May 4th. Please take a moment to congratulate them on this impressive accomplishment.



James Meadow received the Boyd Evison Graduate Fellowship Award for 2010. He is the sixth person to receive this award. He plans to use this fellowship to study Lower Geyser Basin in Yellowstone.



Jerome J. Schleier received a research grant from the Montana Academy of Sciences Student Research Grant Program. His proposal was titled, "Development of a Model for Determining the Toxicity of Pesticide Mixtures in Aquatic Environments".

LRES Workshops

LRES Sponsored workshops and webinars



In January LRES sponsored an audio conference with the Office of Sponsored Programs entitled "Writing Successful Grant Proposals". It was facilitated by Chuck Howard Jr. a senior research scientist at Oregon National Primate Research Center. Material covered included; funding sources, knowing your reviewers, application forms, and proposal components.



In April LRES sponsored a workshop with the Provost office on becoming a prolific scholar entitled "Publish and Flourish". The conference was open to faculty and graduate students and 20% were from LRES. The workshop was presented by Dr. Tara Gray Professor and Director of the Teaching Academy from New Mexico State University. Material covered included: managing time, writing every day, revising, getting help, polishing and publishing.



In April LRES sponsored a webinar entitled "Time Management: Make Every Minute Count. How to Fit 28 Hours into a 24 hour Day". The conference was facilitated by Dr. Dan Wetmore who presented seven techniques to better manage your time. They are as follows: maintain balance, prioritize, write it down, keep a daily planner, keep an interruption log, delegate, and control procrastination.

Materials from these events are available from Merry Pacey paceley@montana.edu.

Student Events

Academic Year End Events

LRES "Fuel up for Finals" Undergraduate Open House was held May 4th in LRES 325. The academic year-end event had an open and social atmosphere with students sharing their summer plans and enjoying a break from studying. Pizza and refreshments were served.

LRES Pre-Graduation Open House will be held May 7th from 3:00-4:00 P.M. in LRES 325. Graduating students and their families are invited to come join advisors and student colleagues to celebrate their accomplishment while enjoying coffee and cake.

Class Highlights

A quick snapshot of LRES class activities

LRES 310 Professional Preparation

students hosted three former LRES students as guests, Richard Oppen, Director of Montana Department of Environmental Quality, Brian Kozar, Terra Soil and Environmental Solutions, and Ann Schwend, Montana Department of Natural Resources and Conservation *Water Resource Planner*



LRES 355 Nutrient Cycling

took a field trip where students were led on a tour of an organic farm by Mark Roeder, of Farms for Families. He experiments by using a movable chicken coop to graze and fertilizer pasture without moving fertilizer around. Earlier in the day, the students learned about the nutrient removal technologies being used at the Bozeman Wastewater Treatment Plant.

LRES 421 Holistic Thought and Management

featured student projects to: share Montana gardening techniques with Mongolian counterparts, suggest how to bring more sustainability information into existing MSU classes, suggest ways to raise awareness of sustainability for MSU students, produce an information pamphlet evaluating use of phytoremediation for the Silver Bow Creek watershed, assist in documenting the MSU carbon footprint, promote and participate in the Gallatin Earth Celebration held during Earth Week, assist in collecting electronic materials for recycling, hosted Jenny Sabo's talk about family farming and Roland Kroos' talk about being a Holistic Management consultant.

LRES 460 – Soil Remediation

students went on an all-day field trip to Anaconda led by Stuart Jennings of Reclamation Research Group, to learn

about metal mining, Butte and the Berkeley Pit. The tour included an overview of the Golden Sunlight Mine near Whitehall and floodplain remediation along Silver Bow Creek. In the shadow of the Anaconda Smelter, Ken Brockman from the U.S. Bureau of Reclamation shared methods being used to remediate arsenic contamination that resulted from decades of copper smelting. Several sites were visited where contaminated soils had been replaced or treated in-place with soil amendments, followed by successful plantings resulting in stands of native grasses where no vegetation could grow before. Hundreds of acres of wetlands are also being created in areas used for soil salvage.



Faculty Spotlight

Insight to the activities and projects of LRES Faculty

Bob Peterson's appointment is approximately 80% research and 20% teaching. He currently teaches two graduate courses, Biological Risk Assessment and Insect Ecology, and the undergraduate course, Cellular and Molecular Biology. His research program primarily is focused on agricultural and biological risk assessment. More specifically, the program is centered on comparative risk assessment. The purpose of comparative risk assessment is to qualitatively and quantitatively compare different environmental risks for the purpose of improved decision-making. Additional areas of research emphasis include plant-insect ecophysiology and integrated pest management. All three areas form a diverse, yet interrelated research program.



and pest risk. Biotechnology risk research focuses mainly on agricultural crops and includes glyphosate-tolerant crops, Bt crops, and plant-based biopharmaceuticals. Invasive species research includes human-health risks associated with vector-borne diseases, biological control agents, and human and ecological risks from introduced weed species. The pesticide risk research is mainly tied to comparative assessments of biotechnology or invasive species issues. For example, human health risks from West Nile

The specific risk research he is involved with can be grouped under biotechnology risk, invasive species risk, and pesticide risk,

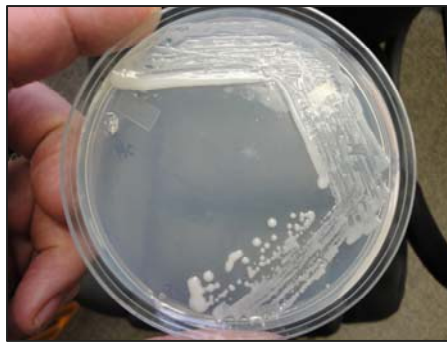
Virus are compared to risks from the use of insecticides to control mosquito vectors of the virus. Much of Bob's work since 2005 has emphasized comparative risks associated with insect-borne pathogens and management tactics. The initial research represented deterministic risk assessments, so a natural extension of the work was to examine the risks probabilistically. In addition to mosquito insecticides, risks from drugs, repellents, treated bednets and battle-dress uniforms, and mosquitofish have been assessed and published, the work being led by graduate students (Rex Davis, Jerome Schleier) and postdoctoral research associates (Paula Macedo, Frank Antwi) in his lab. Recent research led by Jerome Schleier has relied on field experiments to characterize and model the fate of insecticides in the environment.

Soil and Environmental Microbiology

Insight to the activities and projects of LRES 552 Class

LRES 552 is a graduate course in Soil & Environmental Microbiology in its 8th iteration taught by Dr. Tim McDermott, Professor of Soil and Environmental Microbiology in LRES. The microbiology literature is replete with commentary regarding the inability to isolate microorganisms from the environment. However, microbiologists have recently challenged this problem and philosophy, culturing ecologically relevant microbes for extensive study and characterization, and for use as models for understanding microbial processes in nature. The course seeks to show the graduate student, through hands on training and experience, how to culture the organisms typically only encountered and studied as DNA sequences amplified by PCR from an environmental sample. Students select a specific type of microorganism or microbial activity of interest, study the relevant literature to become an expert on the organism/activity, and then design an appropriate enrichment and isolation strategy.

Students are encouraged to link their projects to their thesis research if relevant, though this is not mandatory. Through the years, students have embarked on interesting projects. Some fun examples include the isolation of: thermophilic



viruses; anaerobic acetone degraders; iron, selenate, or arsenate reducers; hydrogen, hydrogen sulfide, or iron oxidizers; TNT degraders (!); and agriculturally relevant crop biocontrol agents. This semester LRES graduate students (advisor) and their class

projects included: Karin Neff (Zabinski and Maxwell), soil humic and fulvic acid degrading microbes; Alex Michaud (Priscu), magnetotactic bacteria; Justin O’Dea (Miller), soil nitrifying bacteria; James Meadow (Zabinski), mesophilic cyanobacteria from Yellowstone soil crust systems; Trista Vick (Priscu), Antarctic sulfate reducers; and Ann McCauley (Jones), soil N₂ fixation. Students gain more from this course than isolation/cultivation competency. As a function of preparing their isolation/enrichment protocols, each student learns a great deal about a specific organism’s metabolism and attending biochemistry. By doing so and by being exposed to graduate level discussion of various metabolisms, biochemistries, and methodology of the various projects, they learn about various types of microorganisms that they typically do not encounter in undergraduate or graduate course offerings.

~ Tim McDermott

Undergraduates at NCUR

Insight to the activities and projects of LRES Undergraduates

The National Conference on Undergraduate Research (NCUR) is an annual meeting to encourage and promote research, scholarship and creative activity by students at institutions of higher education. This year’s conference was held in April, in Missoula, MT, and five LRES students attended the conference. All five of the students presented work from the LRES capstone course. Allison Ramsey and Alexey Kalinin presented a poster entitled, “Using the Nitrogen Cycle in Mulching Treatments in a Small Scale Vegetable Farm to Analyze Nitrogen Fertilizer Alternatives”; and Meagan Iott, Kara Johnson and Matt Adams gave a talk, “Intercropping and Bait Crops: A Sustainable Farm’s Helping Hands”. Alexey Kalinin gave a second presentation summarizing research he has been working on in Brian McGlynn’s lab: “Seasonal distribution of nutrients in an alpine lake:

nutrient fluxes and residence time analysis. Students summarized their experience at NCUR and the importance of undergraduate research. For Alexey, the conference was in part important because “getting ready for the conference helped me understand my research better - to the point that I could explain complex concepts in simple terms and not struggle for words saying “ummm..this is sorta hard to explain!” Allison Ramsey prepared two versions of her poster on nitrogen cycling, one aimed at other science students, and a second geared toward the general public. “Trying to get together a poster even though all the information was previously gathered was not as easy as I anticipated. It’s difficult to visually clarify and express scientific information.” For Meagan Iott, the paybacks for all the work were clear. “I learned about a wide range of research being completed by

students my age around the country. We all shared the same drive to explore something that interested us. The students we heard from New York City were just as curious about the environmental sciences as we were. They were just concentrating on urban areas while we looked at rural. Opportunities like NCUR highlight the role of research in LRES undergrad education. Students gain research experience that according to Matt Adams, “help me get a better real life view of how science from the classroom can be applied. It was eye-opening to see how flexible and dynamic your research questions and methods have to be and also to see what level of understanding of statistics you need to design an effective experiment. Our undergraduate research project was an important stepping stone towards my scientific career.”

~ Cathy Zabinski

LRES Graduating Seniors

Bachelor of Science Degrees

Matthew Ryan Atkinson-Adams

Environmental Sciences – Environmental Biology -
Highest Honors

Kara Ashley Chelgren

Land Resource Sciences – Agroecology - Honors

Amy Joan Dethlefs

Environmental Sciences – Soil & Water Science

Amy Fitzpatrick

Environmental Sciences – Environmental Biology

Nathan Vaughn Harrison

Land Rehabilitation

Meagan Colleen Iott

Land Resource Sciences - Agroecology

Michael Christian Jensen

Environmental Sciences – Soil & Water Science

Paramjit Singh Karam Singh

Environmental Sciences – Environmental Biology

Daniel David Kettman

Land Resource Sciences

Land Resources Analysis & Management

Ronald Zachariah Lodge Pole

Land Resource Sciences

Land Resources Analysis & Management

Carol Ranae McFarland

Land Resource Sciences – Agroecology - Honors

Ronald Patrick Quinn

Land Rehabilitation

Allison Marie Ramsey

Land Rehabilitation - Honors

Adam Huston Sarvey

Land Resource Sciences

Land Resources Analysis & Management

Master of Science Degrees

Sunni Marie Heikes-Knapton

Land Rehabilitation

Steven Charles Jay

Land Resources & Environmental Sciences

Jeffrey Thomas Jewett

Land Resources & Environmental Sciences

Tara Noel Martin

Land Rehabilitation

Jeffrey Donald Whitmus

Land Resources & Environmental Sciences

Jessica Lindsay Wiese

Land Resources & Environmental Sciences

Doctor of Philosophy Degrees

Markus Dieser

Ecology & Environmental Sciences

Melanie Crystal Melendrez

Ecology & Environmental Sciences

Oscar Gerardo Perez

Land Resources & Environmental Sciences

Shannon Lea Savage

Ecology & Environmental Sciences

Outstanding Senior



Carol McFarland *graduates this semester with her B.Sc. of Land Resource Science in Agroecology. Carol has been a self-supporting student from Corvallis MT who has successfully balanced her education with her employment opportunities to gain a varied and rich experience while at MSU and to contribute in so many meaningful ways. We helped her design a program to fit her interests in applying ecological principles to agriculture at any scale of operation. Her internship was at the Towne's Harvest Garden and during that time, she was one of the pioneers to launch the student run market garden. Simultaneously, she was an active member of a campus chapter of Engineers without Borders and thus was generally advancing the campus sustainability effort. She then pushed her comfort zone and took on an internship as a crop scout to check expansive dryland farms growing small grains for pests near Brady, MT while working for Jeff Farkell of CENTROL Crop Consultants. Carol says of her time at MSU "I had a great experience at MSU; a really big part of my education has been involvement beyond coursework – working in labs, the undergraduate scholars program, TAing, etc.... I do appreciate the emphasis in research and practical approach to sustainable management". Carol will be recognized for her achievement as the LRES Outstanding Undergraduate at the College of Agriculture; graduation ceremony May 8th with a formal recognition on stage where she will be presented with a plaque. Now she is going to take another step out of the comfort zone into the Peace Corps before a likely enrollment in graduate school.*

~ Bruce Maxwell, Advisor

LRES Scholarship Recipients

Please help to congratulate the following individuals.

2010-2011 Scholarship Banquet

"The College of Agriculture annual Scholarship Banquet was held at the Grantree Inn on Friday, April 16, 2010. Almost 250 people attended, to include the Ag Student Council, scholarship recipients and their families, donors, College of Agriculture Dean, Department Heads, faculty and staff. Entertainment was provided by the CAKE quartet. The College of Agriculture awarded \$250,000 for the 10-11 Academic Year, with over 90 active donors. The speakers this year were Alena Ogg, (a scholarship recipient) and Bruce Parker, (a scholarship Donor). Each shared their perspective as a recipient and a donor."

~ Linda McDonald

LRES 2010-2011 Scholarship awards

Erskine Excellence in Agriculture

Christine Miller—Land Resource Sciences
Margaret Franquemont— Land Rehabilitation

Land Resources Stewardship Scholarship

Shawn Jones— Land Rehabilitation
Carmel Johnston—Environmental Sciences
Collin Preftakes—Environmental Sciences
Joseph Old Elk—Environmental Sciences
Amanda Hyman—Environmental Sciences
Anna Bergstrom—Land Resource Sciences
Alexey Kalinin—Environmental Sciences
Kathleen Huse—Land Resource Sciences

Arthur H & Margaret Post

Elizabeth Usher—Environmental Sciences

College of Agriculture Scholarship Awards

COA Honors Scholarship

Grady Anderson—Environmental Sciences
Abigayle Cutting-Smith—Environmental Sciences

Annin Scholarship

Carmel Johnston—Environmental Sciences

Montana Wheat & Barley/Bob Brastrup Memorial

Collin Preftakes—Environmental Sciences

Campbell Family Foundation

Anna Bergstrom—Land Resource Sciences
Tom Bogen—Environmental Sciences
Kendra Kaiser—Environmental Sciences
Jessica Smith—Environmental Sciences

Donaldson Family Scholarship

Alexey Kalinin—Environmental Sciences

Anthony C. Gaffke Scholarship

Alexander Gaffke—Environmental Sciences
Alexey Kalinin—Environmental Sciences

Gallatin Valley Ag Scholarship

Tom Bogen—Environmental Sciences
Alexey Kalinin—Environmental Sciences

Marion T. Hedegaard

Keenan Brame—Environmental Sciences
Jessica Smith—Environmental Sciences

Charlie & Wietske Jarrett Scholarship

Bracket Mays—Land Rehabilitation

Parent Family Scholarship

Albert Erwin—Land Rehabilitation

Land Resources and
Environmental Sciences

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