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Department of
Land Resources & Environmental Sciences

Congrats Graduates!

The Spring issue is dedicated to celebrating our outstanding students, staff, and faculty. Please enjoy reading about our department's many accomplishments as well as the many examples of excellence and classroom engagement. We would like to recognize those graduating this academic year, which include 30 undergraduate students, 10 Thesis M.S. and 24 Professional M.S. students, and 3 Ph.D. recipients.

**"Be kind and do good work."
Ruth and Richard Sterling**

Students, you have each earned a truly impressive degree and with so much important work to be done it's a remarkable time to be an environmental scientist. We are so proud and excited for you to apply the knowledge and critical thinking skills you've mastered to be the leaders who will improve our understanding and management of our natural and agricultural resources, making our one earth a better place.

Sterling passes the Team LRES Baton

Dear LRES Family – I am excited to share that after 13 years as your Department Head, I am passing the baton so I can engage in more research and teaching activities. It's hard to believe that I arrived here with my family in Fall 2009 from NMSU, but I can honestly say it's been an absolute pleasure growing the department and engaging partners with so many who live the Land Grant Mission. It has been a true honor to work with and learn from such fantastic faculty, staff and students, as I led with these 3 R's: Relationships, Respect, and Reciprocity (and as you can imagine, a 4th R came in handy too = Resilience). You will continue to see me riding my bike to campus throughout the year and can find me in Linfield Hall in August, so please stay in touch!



LRES will be in excellent hands with Dr. Bob Peterson, our new Department Head in July, who is an exceptional colleague, educator, and scholar. He is a Professor of Biological Risk Assessment with over 100 peer-reviewed papers and multiple grants from a diversity of funding sources, Past-President of the Entomological Society of America, Director of LRES' very successful Online MS program which is celebrating its 10th year, avid photographer, and musician (just to name a few of his achievements). Please join me in welcoming Dr. Peterson to this new role!



Be well, Tracy M. Sterling

LRES Outstanding Senior Award - Meghan Robinson



Meghan Robinson is this year's LRES Outstanding Senior award winner. She graduated in May 2022 in Land Resources and Environmental Sciences in the Environmental Biology option. Meghan earned an overall GPA of near 3.95 and graduated with Highest Distinction from the MSU Honors College.

Meghan served as an undergraduate teaching assistant for Soils (ENSC-245) for two semesters (Fall 2020 and 2021). Dr. Hartshorn remarked with emphasis that Meghan "is easily one of the most conscientious, nurturing, and organized 'Teaching Assistants' I have ever worked with (denominator ~ 135 TAs)".

Meghan also demonstrated teaching aptitude in an elective Honors College course that links MSU students with K-12 students as mentors through the PEAKS Program. Meghan's mentor in the program stated that "Meghan engaged in a meaningful way with a non-traditional student and provided leadership to guide the mentoring relationship."

Meghan Robinson demonstrated strong analytical and research skills through work with Dr. Sigler in the Extension Water Quality Program. Sigler commented that "Meghan consistently exceeded expectations in being organized for meetings and following through on complex, detail-oriented tasks independently." She wrote a successful proposal to the MSU Undergraduate Scholars Program to engage with volunteer

monitoring groups to help them collate and analyze their data, an effort resulting in 15-years of water data for Whitefish Lake and tributaries available publicly for the first time.

Meghan has shown incredible aptitude for teaching, research, and community engagement as an undergraduate and we are very excited that she has decided to start a graduate degree in LRES beginning in Fall 2022.

Meghan was nominated for this award by Dr. Bill Inskeep, Dr. Adam Sigler, and Dr. Tony Hartshorn with additional input from Dr. Stephanie Ewing (LRES), Adrian Massey (LRES), Lena Wessel (PEAKS Program, Bozeman School District)

Awards for Excellence

Meghan Robinson has worked as a Teaching Assistant in ENSC 245, where she aided in helping students understand the concepts of soil science. She put effort into maintaining communication with the students while grading and supervising classes, and led a lab section independently as an undergraduate. Meghan also served in the LRES Undergraduate Club, where she volunteered to help organize the Spring 2019 Research Mixer and was involved with leading club



activities and networking opportunities. Off-campus, Meghan was a NASA Space Public Outreach Team Presenter. She presented science lessons to elementary students across Montana through NASA's Montana Space Grant Consortium, and was involved with development of presentations and activities for encouraging student curiosity and interest in science. She was a mentor in the Honors College where she worked with the Gifted Students Class. She also worked with a Bozeman elementary student on an academic enrichment project in 2020.

*Mentor: Dr. Adam Sigler
Nominated by Dr. Bill Inskeep*

Ed Shaw is an active member of the Montana State University community through attending events, club meetings, and taking a leadership role in the Food Product Development Lab. Representing the Sustainable Food and Bioenergy Systems program, he attended the One Valley Community Foundation seat at the table 2021 event. To practice and maintain French language skills for research related goals in Senegal, Ed recently joined the Montana



State French club. From the spring of 2019 to the Fall of 2020, he was a member of the Friends of Local Foods club and he has been a part of team Promoting Agricultural Transformation Holistically (PATH), a multidisciplinary team within the Food Product Development Lab engaged in food sovereignty initiatives in Senegal. Since the summer of 2021, he has taken on a project leader role, involved in applying for funding, surveying collaborating communities, and developing an FDA level manufacturing protocol and HACCP plan for the production of food products by collaborating Senegalese women farmers.

*Mentor: Dr. Wan-Yuan Kuo
Nominated by Dr. Bruce Maxwell*

College of Agriculture Award of Excellence - NACTA Award of Merit



Emma Kubinski received a NACTA Teaching Award of Merit for Graduate Students for her work designing a new lab activity to facilitate students learn the correct identification of agricultural weeds, noxious species, and invasive species, as well as developing new laboratory activities, as the TA of Weed Ecology and Management.

I have been fortunate to advise numerous outstanding graduate students and Post-Doctoral Research Associates during my career. Without any doubt, Emma Kubinski is one of the best I have had the pleasure to know. It is my evaluation that she ranks within the top five percent of the more than 50 Post-Docs and Graduate Students I advised, co-advised, or participated in grad student committees.

During the Fall 2021 semester, Emma Kubinski was the TA of ENSC 443, Weed Ecology and Management. Emma Kubinski was approachable and patient, and explained complex material clearly to students in the class. I frequently heard very positive comments from students in the class regarding Emma Kubinski.

I benefited enormously from having Emma Kubinski TA-ing ENSC 443. As TA, she reviewed the complete course information, provided critical inputs that helped me improve the lectures, and volunteered to design a new lab activity to facilitate students learn the correct identification of agricultural weeds, noxious species, and invasive species. Furthermore, she was essential in the development of two new laboratory activities: an evaluation of the critical period of weed control in vegetable gardens and an exercise where students compare different herbicide formulations.

Nominated by Fabian Menalled

Nielsen Pedology Graduate Research Assistantship FY22



Caitlin Mitchell

Emeritus Professor, Dr. Jerry Nielsen, in partnership with his wife LaVonne, established the Nielsen Graduate Research Assistantship to help spread an enthusiasm for Montana soils.

Caitlin Mitchell focuses her research on the nexus of pedology, groundwater hydrology, and land use impacts emphasizing interdisciplinary and collaborative science. Her graduate research investigates how the heterogenous distribution of soils across a landscape used for wheat cultivation and grazing dictates the spatial and temporal potential of biogeochemical reactions that transform and remove nitrate.

LRES Environmental Analytical Laboratory Graduate Research Assistantships



Zane Ashford



Skye Keeshin

The Environmental Analytical Lab (EAL) has funds to support two Graduate Research Assistants during the academic year.

Zane Ashford focuses on the impacts of cropping systems on soil health in the northern Great Plains.

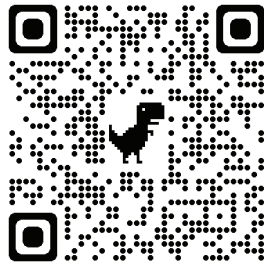
Skye Keeshin focuses on groundwater-surface water interaction dynamics using isotope chemistry of precipitation, streams, and groundwater.

Testing the Waters

Emery Three Irons' return to education results in improved health and water security on Crow Reservation.

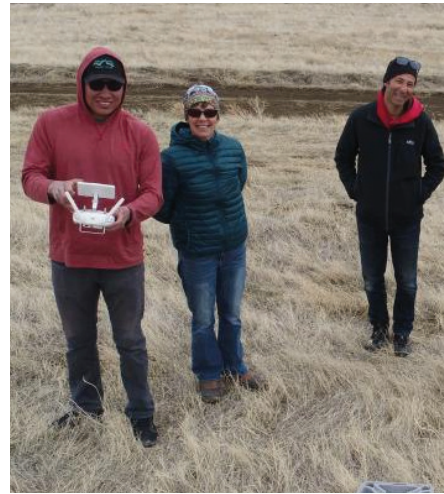
Emery, a Montana State University alum from the Land Resources and Environmental Sciences department, is the principal investigator for the GIS Watershed Project on the Crow Water Quality Project at Little Big Horn College.

Follow the QR code to read the full story in Mountains and Minds



Zach Fighter works to understand, control invasive grass on Crow Reservation

Zach Fighter works alongside co-advisers Jane Mangold and Scott Powell on the Crow Reservation, exploring ways to remediate the invasive grass ventenata through chemical control and remote sensing.



Follow the QR code to read the full story



LRES Crosscut Ski Social

The LRES Community Committee hosted the 7th Annual Ski Social at Crosscut Mountain Sports Center on President's Day, Monday February 21. Fresh snow and frigid temperatures made it a memorable day for the faculty, staff, and students who attended. The day was spent cross-country skiing and snowshoing, and attendees participated in a trail poker game. Congratulations to Jennifer Birdsall and Gaurav Jha, who submitted the best poker hand and photos following the event!



The LRES Community Committee would like to thank all of those who braved the temperatures to attend. Keep an eye out for announcements about the next Ski Social and other LRES events!



LRES Recognition



Bruce Maxwell will participate in a multi-state and institutional USDA funded initiative on data intensive farm management.

Bob Peterson contributed to USGS's Yellowstone Caldera Chronicles.



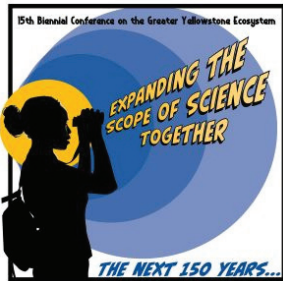
Madelyne Willis, an EES PhD student, participated in a 45 day NASA space simulation experiment.

LRES grad students Hannah Duff, Kate Lozano, Clare Dittimore, Lilly



Cathy Zabinski was interviewed by BBC regarding Ukranian Wheat.

Latrice Tatsey was featured in a College of Letters and Science Student Spotlight.



Secenbaugh, Erin Teichroew, and Colter Mumford will present at GYE Biennial conference.

Congratulations to Stephanie Ewing for earning promotion to Professor. Please take a moment to congratulate her achievements!



Isabella Montoya, Benjamin Morris, and Danielle Neumann were awarded 2022 Professional Master's Fellowships as new students in the online MS in LRES program.

Dr. Stephanie Ewing is researching global warming feedbacks from thawing permafrost with the IoE as part of a NSF funded project.



The Graduate School Land Grant Excellence Awards were awarded to Kaleb Baber and Simon Fordyce for "Highly effective in engaging with the community, by sharing and applying new knowledge that is locally relevant and mutually beneficial."

We'd love to hear from you!

To share your research and/or professional accomplishments in an upcoming newsletter, please contact:

Reilly Tunby, Administrative Associate,
lresfrontdesk@montana.edu

College of Agriculture Interdepartmental Bowling Competition

LRES participated in the first College of Agriculture interdepartmental Bowling tournament. Team LRES was proud to place 2nd overall, and congratulations to the MCB team for winning.



LRES GSO raises \$1700 with annual Giving Day



DONATIONS

♥ 21

DOLLARS RAISED

\$ 1.73 K



Welcome our New LRES Field Techs

Eric Friesenhahn,
Research Associate,
Wheat stem Sawfly Lab



Tyler Hicks

Research Associate, Crop and
Rangeland Weed Ecology
Lab

LRES graduate students present research at Society for Range Management Conference in Albuquerque NM

Graduate students, Colter Mumford, Lilly Sencenbaugh and Erin Teichroew, members of Dr. Rew's Invasive Plant Ecology and Management group, all presented their research at the 2022 Society of Range Management (SRM) conference in February. Attending a conference in person was an exciting experience! While of course nervous, they all enjoyed presenting their research and commented that the planning and preparation for the conference strengthened their knowledge of the subject matter beyond the typical writing and reporting activities. They appreciated hearing and chatting with other students and researchers and learnt a lot from the experience. Attending the conference was made possible due to scholarships the received from the Land Resources and Environmental Science Department, the Graduate School and the College of Agriculture .

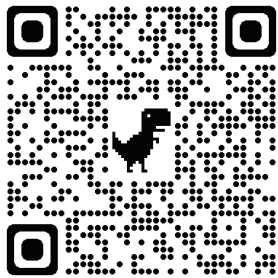
– Thank you! Major Advisor, Dr. Lisa Rew



The Lake at the Bottom of the World

The feature film “The Lake at the Bottom of the World” produced from the NSF-SALSA grant awarded to MSU and John Priscu was screened at the ‘Wild&Scenic Film Festival’, the ‘Frozen River Film Festival’, and the ‘American Advancement of Science’ annual meeting.

It is thought that underneath the Antarctic ice sheet lies an entire system of over 300 lakes, only recently revealed through satellite imagery. With dual goals to discover new life forms and to understand the past climate history of the fragile West Antarctic Ice Sheet, an international team of scientists ventured to the virtually unknown interior of Antarctica to explore a subglacial lake they believed is buried 3,600 feet beneath the ice sheet. As they struggle against the ferocity of the ice and wind, they consider



how our relationship with nature - and with one another - will impact humanity and the future of all life on our rapidly changing planet.

Follow the QR code to view the trailer, as well as find screening information.

John Priscu becomes Faculty Emeritus

After 38 years, Regents Professor John Priscu retired from the Department of Land Resources & Environmental Sciences, the College of Agriculture, and MSU in December 2021.

Dr. Priscu has had a highly productive career, which, in addition to high-quality instruction from freshman to graduate levels and service at local to international levels, his research into the biogeochemistry and microbiology of icy environments has led to 250 peer-reviewed, highly-cited journal articles (many in high-visibility journals, such as Science and Nature), and his presentation of >300 scientific talks with students and postdocs, as well as 100 invited seminars. Dr. Priscu has had a consistent record of acquiring grant support from NSF, NASA, and other funding agencies (totaling ca. \$60 million) over his employment at MSU, including major funding for international collaborations such as NSF-LTER, -SALSA, -WISSARD, and -ALPS, and NASA-WATSON.



Spring 2022 Capstone

How Do Policy, Laws and Incentives Shape Landscapes?

This spring’s LRES capstone focused on the prompt: Policy, laws, and incentives are implemented to address an environmental need. How do these actions shape landscapes both intentionally and unintentionally?

The class approached this prompt by looking at the landscape as a whole, plants, water, soils, and climate change. Within this, they explored the Clean Water Act, the Clean Air Act, National Environmental Policy Act, Superfund, Mining Law, Water Rights, and more.

As these seniors leave LRES to work in the field, it is important that they are conversant in these laws and incentives that drive the work that needs to be done. They did a great job!



ENSC 499R Instructor, Dr. William Kleind

GSO Research Colloquium

On April 29th, the LRES Graduate Student Organization (GSO) hosted annual LRES Research Colloquium.

As a showcase for both graduate and undergraduate student research, participants were excited to be back in person after two years of virtual colloquiums. The event included 11 online posters as well as 12 live oral presentations. Posters were available online and viewers were able to ask questions and interact with the presenters. The posters displayed the diversity of the LRES Department, ranging from detecting Wheat Step Sawfly damage with remote sensing to using stable isotopes of river invertebrates as a monitoring tool.

On April 29th, the GSO warmly welcomed all attendees to share their research. Oral presentation were presented in the Leon Johnson Annex as well as over WebEx, followed by live question and answer sessions with each of the speakers. The event concluded with our keynote speaker, Dr. Fred Provenza.

We hope that posters and oral presentations will continue to take place in person next year, and students did a wonderful job of communicating their research through this hybrid format. We would like to give a huge THANK YOU to our panel of judges.

Thank you to all who helped make the 14th Annual LRES Research Colloquium a success!

-GSO Leadership and Dr. Jane Mangold



Oral presentation winners
1st: Emma Kubinski
2nd: Dan Chichinsky
3rd: Zach Fighter
Online poster winners
1st: Samuel Koeshall
2nd (Tie): Erin Teichroew, Matthew Rebis
3rd: Lochlin Ermatinger



Graduate Student Awards

Jackson Strand was awarded a Montana Grains Foundation scholarship from the Montana Grain Growers Association

Kaleb Baber was awarded a Land Grant Excellence Award from The Graduate School

Simon Fordyce was awarded a Land Grant Excellence Award from The Graduate School

Lilly Secenbaugh was awarded the Ph.D. GTA Enhancement award from The Graduate School

Laura Berrios-Ortiz was awarded the Ph.D. GTA Enhancement award from The Graduate School

Sale Rhodes was awarded the Ph.D. GTA Enhancement award from The Graduate School

Justin Gay received a Ph.D. Dissertation Completion Award for Spring 2022 from The Graduate School

Emma Kubinski received a NACTA Teaching Award of Merit for Graduate Students for her work designing a new lab activity to facilitate students learn the correct identification of agricultural weeds, noxious species, and invasive species, as well as developing new laboratory activities, as the TA of Weed Ecology and Management

Isabella Montoya was awarded a Professional Master's Fellowship from The Graduate School

Benjamin Morris was awarded a Professional Master's Fellowship from The Graduate School

Danielle Neumann was awarded a Professional Master's Fellowship from The Graduate School

Celebrating Melody's 20 years at MSU and 15 years with LRES. Enjoy your Retirement!



LRES Degrees Awarded Spring 2022

Bachelor of Science

Environmental Sciences

Jade Racquel Berghoff
Erin Nicole Bjorklund
Madeline Grace Bunce
John Jacob Comeau
Michael G Coppola
Nicole Anne Ellis
Daniel H Flavin
Matthew Glendining
Matthew Paul Hickey
Preston Jay Hadley Holmgren
Mickayla Q Johnson
Joseph Patrick Kane
Ryan Matthew Le Prell
Lauren Ann Pierson
Elise Irene Reynaud
Lyra Anne Reynolds
Meghan Marie Robinson
Josephine A Rodrigue
Susanna Julie Walsh
Melissa Ann Widas
Hetta Rose Williams
Gregory Stephen Wilson
Grace Catherine Wynne

Sustainable Foods & Bioenergy Systems-Agroecology

Braedon Christopher Lineman

Professional Master of Science

Land Resources & Environmental Sciences

Anna Anderson
Shaelyn Bauer
Jennifer Becker
Elizabeth Blauwiekel
Kevin Casula
Karli Cich
Monica Coe
Christianne Fisher
Melissa Petrich
Jessica Yates
Helena Wilson

Master of Science

Land Resources & Environmental Sciences

Kaleb Wade Baber
Simon Isaac Fordyce
Katerina N Lozano
Latrice Dawn Tatsey

Entomology

Laissa Cavallini dos Santos
Clare Mikaela Dittimore

Land Rehabilitation

Molly C Haviland

Doctor of Philosophy

Ecology & Environmental Sciences

Justin David Gay
Paul Briggs Hegedus

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 professionals, and more.

For information about making a donation to the Department, please contact Jesse Tufte, MSU Alumni Foundation, College of Agriculture, Director of Development (406-994-4815 or jesse.tufte@msuaf.org).

