



## Congrats Graduates!

Our yearly newsletter is dedicated to celebrating our outstanding students, staff, and faculty. Please enjoy reading about our department's many education, research, and outreach accomplishments. We recognize those graduating this academic year, which includes 51 undergraduate students, 5 Thesis M.S. and 15 Professional M.S. students, and 3 Ph.D. recipients.

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 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, benefitting both people and environments.

## New LRES Faculty and Staff



Tim Covino  
Associate Professor  
*Watershed Analysis*



Andrew Felton  
Assistant Professor  
*Plant and Ecosystems Ecology*

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Department of  
Land Resources & Environmental Sciences



Daniel Chichinsky  
Research Associate  
*Crop and Rangeland Weed Ecology Lab*



## LRES Outstanding Senior Award - Paige Schlegel

Ms. Paige Schlegel is the Department of Land Resource and Environmental Sciences Outstanding Senior Awardee for 2023. Her accomplishments and hard work span across many different sectors of academic life. Paige currently carries a GPA of 3.8, majoring in Environmental Biology with a double minor in Microbiology and Soil Science. In addition, her classroom-based efforts extend to serving as a grader for BCH 442, Metabolic Regulation taught by Dr. Roland Hatzenpichler in the Department of Chemistry and Biochemistry. In that same role, she graded take home assignments and exams, fielding questions from students in a form of peer-to-peer support. Paige was equally busy off campus, where she co-founded and is current vice president of Montana State University Women's Hockey team (2019-2023). She was a volunteer hockey coach for local U12 and U14 girls' teams (2021-2022), and an Eagle Mount volunteer ski instructor for children with disabilities (2022-2023). Furthermore, she participated in MSU "Service Saturdays" volunteer projects that included Invasive Weed Species Management, Habitat for Humanity organization and donation management, and working at a local soup kitchen.

However, while busy with all of the above but unknown to LRES faculty, Paige was quietly working on microbiology research projects in the Hatzenpichler lab group where she was being mentored by Dr. Hatzenpichler and PhD student Anthony Kohtz. Her research activities came to light when she participated in the MSU Thermal Biology Institute seminar program, where she summarized her research project concerning culturing a novel genus of hyperthermophilic archaea from a Yellowstone hot spring. Paige's seminar was completely consistent with the long history of excellent presentations delivered by distinguished internationally recognized experts presenting at the TBI. LRES faculty member Professor McDermott was in attendance, commenting that he was "flabbergasted" and "mentally I fell out of my chair" and Dr. Frank Stewart from the Department of Microbiology commented: "you're a rock star". McDermott nominated Paige for this award, saying that "Paige's research easily ranks in the top five undergraduate research projects and efforts he has witnessed in his near-30 years at MSU". Paige is currently a co-author on a Hatzenpichler group paper led by Kohtz that is under revision and will be first author of another paper that is in preparation and that summarizes her own specific research. In addition, she has presented virtually at an Archaea Power Hour meeting, attended the 2022 American Society of Microbiology conference, Washington D.C. and delivered an invited lecture to BIOM 452 Soil & Environmental Microbiology class.



In summary, Paige Schlegel's accomplishments are extraordinary and in keeping with receiving the Outstanding Graduating Senior Award. Well Done!

## Exceptional Service Award

Lexi Emeny



## Land Grant Excellence Award

Sasha Loewen





## LRES Professional M.S. Program Ranked in the Top 10 Online Master's Degree Programs in the USA

The online Professional Master's program in the Land Resources and Environmental Sciences department ranked 9th in a list of the best online environmental science master's degrees. Montana State University ranked 4th overall on the list of best colleges for online master's degrees in 2023



## LRES Students collaborate in artist-scientist collaboration exhibit



Emma Kubinski and Lilly Sencenbaugh worked with art graduate student Victoria Daily to create a triptych painting as part of the Art and Science Show in MSU's Helen E. Copeland Gallery.

The piece incorporates real-world research on bison habitats and Montana landscapes, and even includes a key to identify native plant species featured in the painting.

## LRES Crosscut Ski Social

Our 8th annual ski social took place at Crosscut Mountain Sports Center on President's Day, February 20th. Fresh snow and good company made it a memorable day for the faculty, staff, and students who attended to cross country ski and snowshoe around the beautiful trails.

We thank everyone who joined us, and keep an eye out for future LRES events!





## Student Awards

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**Het Desai** won first place at the Weed Science Society of America 2023 Conference at Arlington, VA, for his poster titled “Seed Shattering Phenology of Grass and Broadleaf Weeds at Soybean (*Glycine max*) and Corn (*Zea mays*) harvest in SE Montana”

**Madison Foster** received a Scholarship Excellence Award from the Graduate School

**Bethany MacCarter** received a Teaching Excellence Award from the Graduate School

**Cassie Birch** received a Founder’s Day Award for Student Excellence

**Paul Hegedus** received a Graduate Student of the Year award from the International Society of Precision Agriculture

## Lisa Rew received the Fox Faculty Award

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Lisa Rew, professor in the Department of Land Resources and Environmental Sciences, is the recipient of the Fox Faculty Award. The award is intended to reward faculty who are outstanding in teaching, research, scholarship, creativity and mentorship, and is sponsored by the Martin Fox family and the Office of Academic Affairs.

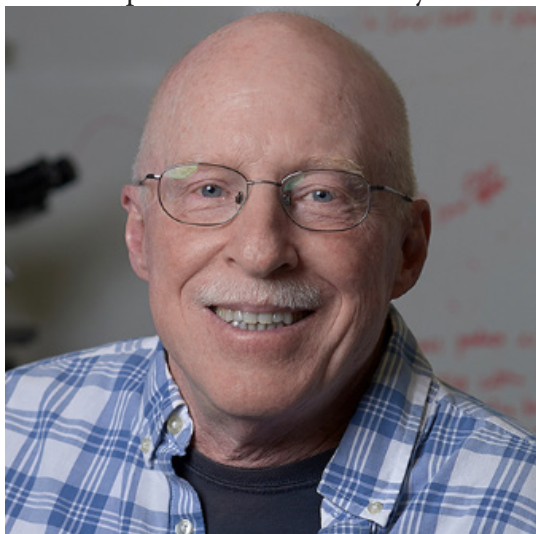
Rew built the department’s Introduction to Land Resources and Environmental Sciences course, and she has mentored dozens of students in research projects, hired them for summer field positions and guided them in writing their own grants. Rew’s research on the ecology of invasive weeds has been described as “stellar,” “truly outstanding” and “world-renowned.” With over 80 peer-reviewed papers and nearly \$7 million in research funding, she has explored how sampling strategies can predict the distribution of invasive weeds across ranges, wildlands and mountains how to prioritize invasive species management to create resilient native plant communities and how to identify dispersion patterns for plant propagules to mitigate their spread.



## Timothy R. McDermott received the MSU Wiley Award for Meritorious Research and Creativity

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Timothy R. McDermott, professor in the Department of Land Resources and Environmental Sciences, is the recipient of the MSU Wiley Award for Meritorious Research and Creativity. The award recognizes an MSU faculty member who has made a single, especially significant research achievement or who has a recent body of research work, either of which should be the product of extensive, mature research activity. It is sponsored by the Wiley family and the Office of Research and Economic Development.



McDermott’s research on methane in Yellowstone Lake in Yellowstone National Park has provided evidence of aerobic methane production- a biological mechanism now estimated to generate 15% of all biological methane. McDermott’s research on aerobic methane production, which includes a series of recent and in-progress publications, are part of “a scientific breakthrough of such singularity that the research community does not yet know the full scope of the finding”

## LRES Recognition

A MSU team developed predictive technology to dial in precision agriculture approaches for producers; Led by Bruce Maxwell



with alumnus Paul Hegedus and graduate students Sasha Loewen and Hannah Duff



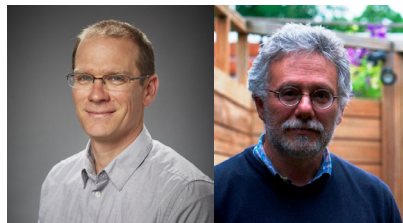
Rosie Wallander was recognized as an Everyday Hero of Research by the MSU Vice President for Research, Economic Development, and Graduate Education



Read more about these accomplishments and what is currently happening in LRES in our scroll

LRES researchers received a specialty crop block grant (MDA/USDA) to develop a water management network in specialty crops in Montana

LRES student research was featured in a National Geographic article about moth-eating bears



Fabian Menalled, Tim Seipel and Elizabeth Reiva collaborated with Bozeman households to study more efficient use of food waste

LRES graduate students Zane Ashford, Lilly Sencenbaugh and Emma Kubinski won SARE grad student research grants

**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

## **2022 Science as Art Contest**

**2022 Winner: Taylor Kennedy, Land Resources and Environmental Sciences**

“As an Entomology M.S. student my life revolves around insects and books and I wanted to create a piece of art that exemplified that.

Made by cutting and folding book pages into a monarch butterfly design, half of the image shows the butterfly wing through paper cut detail while the other half of the wing is cut out and replaced with artificial monarch butterflies.

I chose to create a piece on the monarch butterfly, *Danaus plexippus* whose subspecies, *plexippus* was recently listed as endangered on the IUCN Red List. Their status can mostly be attributed to habitat loss and climate change. The butterflies exiting the pages of this piece is meant to create a visualization of the impact pollinator education and conservation can have on the populations of migratory monarchs as well as other pollinator species. Pollinators are an essential component of ecosystem health and provide ecological services that are vital to human food crop production. Hopefully with a renewed interest in the health of the monarch butterfly we can see an increase in populations in the next few years.”

Taylor's work was featured at the Art and Science Show in MSU's Helen E. Copeland Gallery



## LRES GSO raises \$1,038 with annual Giving Day



### Land Resources & Environmental Sciences

**\$1,038**  
Amount raised



**18**  
Donors

## 100th Annual Day of Student Recognition Recipients

2023 marks the 100th year of the Day of Student Recognition. In honor of this milestone, the Office of Student Engagement, in partnership with offices and departments across campus, has expanded the number of awards recognized as well as expanded from two award categories to five. We are proud to have several LRES students receive awards!

### Legacy Awards

Jackson Mundell- Roskie Memorial Award

### Service Awards

Sasha Loewen- Graduate Land Grant Excellence Award

### Leadership Awards

Walter Scheldorf- University Student Housing Outstanding Peer Leadership Award

### Teaching and Mentorship Awards

Savanah Olson- University Student Housing Extra Mile Award

## Spring 2023 Capstone

“How do we solve local environmental problems?”

In February, our Capstone Class met with local environmental leaders to listen to their concerns about the Lower Gallatin Valley. They provided us with a series of questions that would help them with their important work. Over the last several months, the capstone students have conducted a literature search and some analysis to help answer these questions. They divided themselves into five groups and presented their findings in the following subjects:

1. Critical Areas - What are the definitions of critical or sensitive lands?
2. Pollution Load – What are the pollution loads from stormwater and septic systems?
3. Prioritizing Restoration - How do we prioritize restoration sites, given environmental change?
4. Natural Storage in Floodplains - How do we restore local sites to increase stream and floodplain connectivity?
5. Human Engagement - How can we help engage the public to manage and maintain these systems?





# GSO Research Colloquium 2023

This year the Graduate Student Organization of the Department of Land Resources and Environmental Sciences hosted the annual research colloquium in Inspiration Hall on Thursday, April 13. Undergraduate and graduate students presented 9 posters and 7 talks on a range of subjects from invasive plants to wheat stem sawfly. The night also featured 3 student awards including the Outstanding Graduating Senior Award (Paige Schlegel), Exceptional Service Award (Lexi Emeny), and Land Grant Excellence Award (Sasha Loewen). The night was capped off with a fantastic keynote address by Dr. Cathy Whitlock titled “Yellowstone on my Mind.”



## Awards for best poster presentations

- 1) Henry Stowell
- 2) Meghan Robinson
- 3) Rich Schonenberg

## Awards for best spoken presentation

- 1) Jackson Strand
- 2) Paige Schlegel
- 3) Erin Teichroew

# LRES 593: Challenges in Ecology and Environmental Science, Fall 2022

8 PhD students and 15 faculty presenters met for a 3-day immersion in late September 2022, providing common starting point and cohort-building experience for students in the Ecology & Environmental Sciences cross college PhD program. In a welcoming and convivial learning environment, students worked to develop the vocabulary, peer group, and core professional skills necessary to support an interdisciplinary approach to grand challenges in ecology and environmental sciences.

Students attended local excursions to meet with researchers, land managers, non-governmental organization representatives, and land owners who have been tackling “grand challenges” within this ecosystem and to witness many of the core geological and ecological attributes of the Greater Yellowstone region.

## Instructors:

- T. Sterling, LRES; Director LRES Professional MS
- D. Debinski, Professor & Department Head Ecology
- A. Hansen, Professor, Ecology; Director of IoE



# LRES Degrees Awarded 2022 - 2023

## Bachelor of Science Environmental Sciences

*Kyle Ammerman  
Ryder Bechtold  
Cassie Birch  
Tyler Boyd  
Niah Brass  
Haley Buckbee  
Russell Conti  
Cassidy Crittenden  
Alexandra Doggett  
Daniel Engen  
Karlina Feduschak  
Benjamin Greene  
Sophie Grimm  
Elizabeth Haveman  
Zachary Horsman  
Sam Lashley  
Cassidy Leno  
Noah Majerus  
Dalton Matthews  
Joseph Morse  
Sam Neitlich  
Kaylee Petro  
Matthew Phelan  
Rabi Phelan  
Sophie Pigman  
Matthew Rebis  
Phillip Rising Sun  
Emma Ronquillio  
Luke Scannell  
Paige Schlegel  
Kevin Sheridan  
Elijah Vargas  
Calli Veautour  
Kieran Wilder  
Laine Young*

## Sustainable Foods & Bioenergy Systems-Agroecology

*Nathaniel Bowen  
Andrew Christensen  
Rowan Edwards  
Lexi Emeny  
Parker Erickson  
Braedon Lineman  
Samuel Paradee  
Edward Shaw  
Leah Sherman*

## Professional Master of Science Land Resources & Environmental Sciences

*Alison Beres-Nork  
Andrew Bielakowski  
Margaret Cross  
Casey DeLay  
Alexander Gangi  
Shelbie Hardy  
Elizabeth Jones  
Stefan Kelly  
Sarah Kirby  
Bethany MacCarter  
Claudia Macfarlane  
Brianna Oestreich  
Robyn Skillman  
Matthey Sarvar  
Theresa Ten Eyck  
Torren Valdez  
Melissa Wysocki*

## Master of Science Land Resources & Environmental Sciences

*Peter Bugoni  
Zachariah Fighter  
Madison Foster  
Kara Hettinger  
Latrice Tatsey*

## Doctor of Philosophy Ecology & Environmental Sciences

*Bryce Currey  
Hannah Duff  
Sasha Loewen*

## 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 Austin O'Neill, MSU Alumni Foundation, College of Agriculture, Director of Development at 406-994-4508



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