

LRES Newsletter

Spring 2020

Justin Gay
Missouri River Breaks, Central Montana

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Congratulations Graduates!

The Spring issue is dedicated to celebrating our outstanding students, staff, and faculty. I hope you enjoy reading about our department's many accomplishments as well as the many examples of excellence and classroom engagement.

"We are not what we know but what we are willing to learn."

-Mary Catherine Bateson

We would like to recognize those graduating this academic year, which includes 44 undergraduates, 28 M.S. recipients and 5 Ph.D. recipients. Students, you each have earned a truly impressive degree during an unprecedented semester. It's an amazing time to be an environmental scientist with so much important work to be done- we are so proud and excited for you to apply the knowledge and critical thinking skills you've mastered to be the leaders who help the world better understand and manage our natural and agricultural resources and make our one earth a better place.

Tracy Sterling, Professor & Department Head

College of Agriculture's Transformative Teaching Award Winner: Nick Fox



We are proud to share that Nick Fox won the first ever College of Agriculture's Transformative Teaching Award. Nick is a faculty member in the Department of Land Resources and Environmental Sciences who is passionate about teaching and mentoring students. He teaches a suite of geospatial science courses focused on Geographic Information Systems (GIS) and Global Positioning Systems (GPS) and emphasizes the relevance of these data and information systems to real-world applications. Impressively, Nick has still managed to carve out opportunities to expand the breadth, quality, and effectiveness of his teaching, and in doing so continues to innovate and push the boundaries of

how these critical geospatial courses are taught and assessed. Most recently, in response to the COVID-19 crisis, Nick was extremely responsive and creative during the transition to remote instruction. Common comments from students include "Fox is a great professor who cares about his students and the work they put forth. He makes himself accessible to students and is always willing to help when problems arise."

Transformative Teaching and Learning Award

Continued ...

Some examples of his transformative teaching activities are: Nick and his students work directly with the City of Bozeman to integrate modern technologies of field data collection where information is stored within the cloud and synced in real time as they collect data. As one student commented about GPHY358 in Spring 2019, “Great real-world application, good experience to work with the City of Bozeman. Great product in reference to the final story map we created.” For more than a decade, students have mapped 15 irrigation ditches stretching more than 200 miles across Gallatin County in cooperation with the Association of Gallatin Agricultural Irrigators (AGAI) and Gallatin County GIS. Nick has expanded upon this project since taking over. For example, students who mapped the Spain-Ferris Ditch this past year presented their results at the annual AGAI meeting in Manhattan, MT to several dozen ditch operators, federal agency representatives, and political representatives. Nick also continues to work with Gallatin County Emergency Management, mapping trails and parks in Gallatin County to better inform first responders in the backcountry by providing accurate data on trail systems. For example, students recently completed mapping of the Bridger Ridge Trail and the new Story Mill Park in Bozeman.

In summary, Nick is committed to innovating inside and beyond the classroom to provide students with experiences that will prepare them for a post-Covid-19 work landscape. In doing so, Nick has developed relationships with numerous local and regional agencies that directly benefit from the work that MSU students perform on their behalf. It’s a mutualistic relationship that gives Nick a strong platform to experiment with and refine transformative teaching approaches in support of our strategic plan. Nick’s approaches are transforming the hearts and minds of our students, and in that process, redefining the types and quality of partnerships that lie at the core of MSU’s teaching mission.

Nominated by Scott Powell, Spatial Sciences Director

LRES Outstanding Senior Award

Every year the department recognizes an outstanding senior and the department’s criteria for these awards are steep. Students must have strong scholarly standing, demonstrated interest in any aspect of environmental sciences, involvement and commitment in the classroom, leadership, participation and/or membership in scholarly and community groups and potential to contribute to environmental sciences in the future.

Stacey Robbins is this academic year’s award winner. She graduated this May 2020 in Land Resources & Environmental Sciences in the Land Rehabilitation Option with a minor in Soil Science and a 3.89 GPA with Highest Honors.

Stacey received two awards from the Undergraduate Scholars Program at MSU, another from the Montana Institute on Ecosystems, and most recently the John Jachetta Undergraduate Research Award from Weed Science Society of America to help fund her research. Her academic work reflects her interest and commitment to environmental sciences. Stacey is interested in the how and why of environmental science, with an emphasis on plants. Stacey worked with Dr. Lisa Rew for the last few years and developed, instigated and excelled at projects that require different skill sets. Each project had an objective that needed fulfilling as part of a current grant, but Stacey increased the breadth of each project, adding more in-depth questions that helped satisfy her curiosity and desire to learn new topics and techniques. The projects include one on treelines in the Absaroka Wilderness and another on short temporal changes in non-native species spread. The Absaroka project had three different facets: evaluating changes in conifer species’ distribution at and below the treeline; whether the treeline elevation is changing; and, the role of ectomycorrhizae in conifer establishment. The second main project quantifies the rate of spread of non-native weeds, and invasive grass (*ventenata*) in Gallatin county and a non-native forb (*desert alyssum*) in Yellowstone National Park. Stacey excelled at these interdisciplinary projects, was highly motivated and did more independent problem solving than many graduate students.



In addition to her academic work, Stacey volunteered as a mentor for Expanding Your Horizons, a day of math and science for middle school girls. She spent the semester working as a teaching assistant for BIOO 230 Identification of Seed Plants, and she has attended two conferences, the Weed Science Society of America conference and a conference on Mine Design and Closure in 2019. Congratulations Stacey!

Nominated by: Lisa Rew, Cathy Zabinski, and Stephanie Ewing

NACTA Award

The North American Colleges and Teachers of Agriculture (NACTA) Teaching Award of Merit recognizes those individuals whose efforts represent the very best in agricultural higher education and inspire all of us to achieve the highest levels of excellence. The College of Agriculture recognized the following awardee at its virtual Graduation Celebration on May 8th.

College of Agriculture Graduate Student Teaching Award of Merit



I met Sam as an undergraduate when he enrolled in LRES 448, “Stream Restoration Ecology,” the second year I taught the course. Sam invested himself in the course more deeply than most of his peers, engaging the class during discussions and designing a class project that integrated simulation modeling with field work. His standing in the class impressed me enough that I offered him a Ph.D. position in my research lab.

While a Ph.D. student, Sam had the opportunity to serve as a Teaching Assistant for LRES 448 no less than five times. Each time he was a TA, he grew in his capacity as a teacher. He was tireless in his willingness to meet with students, reinforcing the breadth of concepts covered in course lectures, which ranged from hydrologic connectivity in streams to the efficacy of stream restoration strategies and from novel ways of thinking about the scientific method to designing field experiments and data analysis in the R statistical computing environment. In the four years he served as my TA, never once did I see him fail to make himself available at a student’s request -- allowing whatever amount of time was necessary for the student to master the material. He was ever friendly, approachable, and encouraging. Even as the course evolved over time, his mastery of the material was always current. In short, he was an invaluable resource for every student who passed through the course.

The fifth and final time he was the course TA was during my sabbatical, when a new instructor taught the course in my stead. Despite his need to stay focused on finishing his Ph.D., he volunteered for the teaching assistantship because he knew that his experience with the course would make him an invaluable asset to the new faculty and an important resource for the students. That year, by all accounts (including the instructor of record), Sam fully engaged at a level comparable to co-teaching the course. In many respects, Sam mentored the instructor on how to facilitate student success within the context of a course that blends ecosystem theory, management applications, and real-world research experience to teach students about the linkages between aquatic science and stream restoration. Sam’s dedication to teaching is unsurpassed by any Ph.D. student with whom I’ve worked.

Nominated by: Geoff Poole

Promotion and Tenure

Congratulations to **Jane Mangold** for earning promotion to Professor. Congratulations to **Scott Powell** for earning tenure and promotion to Associate Professor. Please take a moment to congratulate our accomplished faculty!



We’d love to hear from you!

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

Tracy Sterling, Department Head,
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Jessie Sheperd, Administrative Associate,
lresfrontdesk@montana.edu

Dorie Seymour, Administrative Associate,
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LRES Recognition



Bruce Maxwell was honored by the Montana Organic Association at their 17th Annual Conference with the 2019 Leadership in Organics Award.



Natalie Sturm, an LRES senior majoring in Agroecology, has received the U.S. Department of Agriculture's Future Leaders in Ag honor. She is one of 20 undergraduate students to be awarded nationally.



Geoff Poole received a \$1.17M NSF grant to study net-spinning caddisfly and how those nets may help the overall wellness of the streams they live in.



Cathy Zabinski received MSU's Women in Science Distinguished Professorship.



Richard Engel was selected as the 2020 Great Plains Soil Fertility Conference Leadership Award winner.

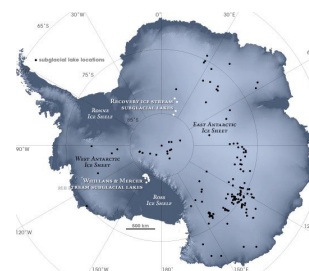


Elizabeth Shanahan (left) and **Ann Marie Reinhold** (right), along with other MSU faculty collaborators, have co-authored a paper that will be published in PLOS One academic journal about the power of narrative in risk communications. .



John Dore was awarded an NSF EPSCoR seed grant through the Consortium for

Research on Environmental Water Systems (CREWS) for his work with Eric Boyd (MBI) exploring a new theory on the origins of mercury detected in wildlife of the Upper Clark Fork River



John Priscu and Trista Vick-Majors share research on Antarctica's Lake Whillans

in *Scientific American*.



Rick Lawrence received AmericaView's lifetime achievement award to recognize his contributions to the field of remote

sensing over his 21-year career.



Bob Peterson, LRES professor and current ESA president was quoted in Fact Check.

GIS specialist and instructor **Nick Fox** works with MSU student's to apply geospatial data to model avalanche runouts.



M.S. candidate, **Meiling Wong** was a finalist in CLS' Three Minute Thesis competition for her work titled, "Competition Between Wheat and Wild Oat, Who Cares?"



John Priscu was awarded the Presidential Fellowship from the Chinese Academy of Sciences to facilitate further research into polar ecology in the Himalayas and other extreme terrains. His work was also cited in Newsweek article on novel deep-sea symbiotic relationship

Erik Killian was awarded an LRES Travel Grant to attend the Phenome 2020 Conference in Arizona .

LRES Recognition

Continued ...



LRES welcomes **Jill Scarson** as our new Student Services coordinator and *welcomes back* **Linda McDonald** to show her the ropes!



LRON graduate **Zach Rittner** receives Gideon Hawley Teacher Recognition Award.



Tony Hartshorn and Douglas Fischer will be offering summer course on “Taking the Pulse of Montana: Leadership Foundations” for Honors students to get a jump-start on college.



Ph.D. candidate, **Sasha Loewen** and undergraduate student **Lochlin Ermatinger** were each awarded a MAGIP scholarship for their geospatially-related work in Montana.

MSU Giving Day



Students and faculty from the Land Resources and Environmental Science Department helped raise over \$700 for projects that supplement coursework with learning experiences outside of the classroom. These projects provide opportunities for students to participate in academic conferences and travel to conduct on-site research. Thanks to all for your contributions!



The following students were awarded travel grants to attend the Weed Science Society of America conference this March in Maui, HI.

- **Hannah Duff**, Ph.D. candidate
- **Michelle Majeski**, M.S. candidate
- **Jordan Meyer-Morey**, M.S. candidate
- **Colter Mumford**, M.S. candidate
- **Stacy Robbins**, B.S. candidate



LRES Online Master's Program in USA Today Special Ag Edition



Fifth Annual LRES Ski Social

Our Fifth Annual LRES Ski Social was held at Crosscut Mountain Sports Center on Monday, January 20th. Our largest event ever was well attended with over 40 faculty, staff, and students. The morning was spent cross-country skiing, snowshoeing, and socializing followed by a delicious lunch catered Cravin's at the cozy Warming Hut on a perfect bluebird day! Snow conditions were fantastic and overall it was a great day. We are so fortunate to have this beautiful facility here in Bozeman and hopefully we can continue coming back for this annual event!



Community Chair, Rick Engel

Tales from the Weed Lab: Mangold Lab Updates & Awards

Shantell Frame-Martin, program coordinator of the Montana Noxious Weed Education Campaign, won MSU's *Excellence in Outreach Award* for staff. She will receive a \$2,000 honorarium.

Frame-Martin was nominated for her work on the campaign, which aims to increase public participation in ecologically based integrated weed management. Last summer, the program conducted a survey gauging public knowledge about noxious weeds, which returned favorable results since the implementation of outreach programming largely led by Frame-Martin.

Two of the most successful outreach projects Frame-Martin has organized are the Adopt-a-Trailhead Montana program and the Montana Real Estate Professionals Online Noxious Weed Training. Adopt-a-Trailhead Montana is a cooperative volunteer program designed to protect Montana's trails from further spread of noxious weeds, and it has led to the installation of 65 boot brush kiosks at trailheads around the state, along with interactive educational booths to highlight the importance of public participation in slowing the spread of noxious weeds. The Montana Real Estate Professionals Online Noxious Weed Training was implemented to increase the knowledge of real estate agents and developers about the economic and environmental impacts of noxious weeds and the laws that govern noxious weed infestations on private properties.

More recently, in coordination with the Mangold Lab at MSU, and the Natural Resources Conservation Service (NRCS), an educational quarter-fold pamphlet on invasive grasses has been developed. "Invasive Grasses of Montana", features ventenata, phragmites, Medusahead, cheatgrass and Japanese brome (not listed as a state noxious weed, identified as invasive). The creation of this educational handout was prompted by the recent discoveries of multiple invasive grass species across the state in recent years *Note: This publication is being offered free of charge. You may request copies from the MNWEC.

For these accomplishments, and many more, Shantell also received the Montana Weed Control Association's "Weed Fighter of the Year" award at their annual meeting in Great Falls, MT. Congrats Shantell!



Shantell Frame-Martin received the 'Weed Fighter of the Year' award at the 63rd annual meeting of the Montana Weed Control Association on January 15th in Great Falls, MT.

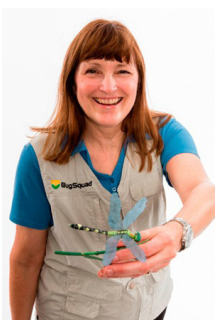
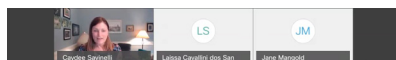


**NORTHERN
ARIZONA
UNIVERSITY**

Audrey Harvey, who received her M.S. in LRES in May 2019 while studying with Dr. Jane Mangold, received the Northern Arizona University Presidential Fellowship. She will be starting a Ph.D. program with Dr. Karen Haubensak in August. Haubensak's lab studies interactions and feedbacks among soils and plants to understand responses to global change and applications to restoration ecology. Audrey, from Arizona and a member of the Navajo Nation, was a Sloan Indigenous Scholar while attending MSU.

Nominated by Jane Mangold

10th Annual LRES Research Colloquium



The Dean of the College of Agriculture, Dr. Sreekala Bajwa, gave a heartwarming opening statement to kick off the event. A LIVE WebEx took place on the last day of the event with our keynote speaker, Dr. Caydee Savinelli (Syngenta), where over fifty people signed on to watch and ask questions. In addition, Dr. Savinelli shared not only knowledge about Integrated Pest Management, but also her experience working for Syngenta, career pathways and key soft skills to succeed in industry. At the end of Dr. Savinelli's talk, the GSO announced the prize winners for oral and poster presentations, where first place winners got \$150, and second place winners each received \$75.



Caydee Savinelli, Ph.D., from Syngenta presented the keynote address via WebEx

From April 26-29th the LRES Graduate Student Organization (GSO) hosted an online version of the 10th Annual LRES Research Colloquium. This event provides LRES graduate and undergraduate students the opportunity to display research through poster and oral presentations to faculty, peers, and the public. This year the event was adapted to an online platform after the shutdown of many in-person events across campus due to the Covid-19 outbreak. As conferences and meetings cancelled across the nation, the students of LRES persevered to share their research despite a global pandemic!

For three days posters and oral presentations were available online for viewing and commenting by fellow students, faculty, and many other invited MSU staff. There were 16 posters and 4 oral presentations submitted, with topics ranging from agriculture in Montana to carbon flux in the Arctic and everything in between.

The presentations and poster sessions were not quite the same as previous years, however; the students rose to the occasion and were evaluated by a team of judges. The judges were Dr. Jane Mangold and Rosie Wallander from LRES, Dr. David Baumbauer who manages the Plant Growth Center, and Dr. Daniel Tyers from the USDA Forest Service/MSU Ecology Department. A huge thanks to these judges who took the time to interact with the students and ask questions about their research.

Thank you to everyone who helped make the 10th Annual LRES Research Colloquium a success!

GSO Leadership:

Laissa Cavallini dos Santos, Jordan Meyer-Morey, Duncan Ocel, L. Tindall Ouverson, Hannah Duff, R. Sasha Loewen, and Dr. Jane Mangold



2020 Colloquium Winners:

Poster Presentation

Undergraduate

- 1st: Joshua Botti-Anderson (UG)
- 2nd: Daniel Chichinsky (UG)

Graduate

- 1st: Mary Farina (G)
- 2nd: R. Sasha Loewen (G)

Oral Presentation

Graduate

- 1st: Laissa Cavallini dos Santos (G)
- 2nd: Mary Elyn DuPre (G)

LRES Degrees Awarded: Spring 2020

Bachelor's Degrees

Environmental Sciences - Environmental Biology

Joshua Botti-Anderson, with Highest Honors
Eric Healy
Ross Hurlbert, with Honors

Geospatial & Environmental Analysis

Nathaniel Barnes, with Highest Honors
Charles Dickson, with Honors
Erik Killian, with Honors
Hailey Webb, with Highest Honors

Environmental Sciences-Environmental Science

Jenna Abolt
Axel Barth
Albert Craig
Kathleen Mitchell, with Honors
Katya Koepsel, with Honors
Caitriauna Olson
Elizabeth Rieger, with Highest Honors
Michael Sainsbury, with Honors
Joseph Thomason
Meghan Tomczyk
Kyle Wyatt, with Highest Honors

Land Rehabilitation

Megan Deming
Graham Mills, with Highest Honors
Stacey Robbins, with Highest Honors

Sustainable Foods & Bioenergy Systems-Agroecology

Hadley Barnard, with Honors
Natalie Sturm, with Highest Honors
James Fauth

Environmental Sciences - Soil & Water Science

Jacob Martin, with Highest Honors
Abigail Northrup, with Highest Honors
Chelsey Trevino, with Honors

Honors Directed Interdisciplinary Studies

Miles Maxcer, with Honors

Graduate Degrees

Master of Science

Entomology

Rekha Bhandari

Land Resources & Environmental Sciences

Kristen D'Agati (Summer)
Michelle Majeski (Summer)
Shealyn Malone
Brianna Whitehead

Online Master of Science

Land Resources & Environmental Sciences

Iris Avila (Summer)
David Binger
Jerin Borrego
Kyla Gupta
Ben Hauptman
Timothy Lenehan
Mark Sees
Heather Supplee (Summer)
Amanda Williams

Doctor of Philosophy

Ecology & Environmental Sciences

Buddhi Achhami (Summer)
Samuel Carlson
Miranda Margetts
W. Adam Sigler

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 Peterson, MSU Alumni Foundation, College of Agriculture, Director of Development (406-994-7089) or kevin.peterson@msuaf.org).

