

# Macy K. Ricketts

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I am a research scientist with strong scientific experimentation, computer programming, and analytical skills. I am passionate about collaboration, education, and science communication.

## EXPERIENCE

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### COLORADO STATE UNIVERSITY DEPARTMENT OF MICROBIOLOGY, IMMUNOLOGY AND PATHOLOGY

Fort Collins, Colorado | Research Scientist I, 2022-  
*Research Scientist and Instructor, Microbial Ecology and Bioinformatics*

### FLATHEAD LAKE BIOLOGICAL RESEARCH STATION

Yellow Bay, Montana | Adjunct Instructor, Alpine Ecology, 2022-  
*University of Montana Summer Session Field Course Instructor*

### UNIVERSITY OF WYOMING MICROBIAL ECOLOGY COLLABORATIVE

Laramie, Wyoming | Graduate Researcher, July 2017 – November 2022  
*Experimentation, Education, and Outreach*

### MONTANA INSTITUTE ON ECOSYSTEMS

Missoula, Montana | Undergraduate Researcher, May 2016 - May 2017  
*Independent Microbiology Research in Glacier National Park*

### THE ECOLOGY OF BIRD LOSS PROJECT

Mangilao, Guam; Garapan, Saipan; Songsong, Rota | NSF Research for Undergraduates Scholar, June 2015 - August 2015  
*Independent Plant Ecology Research, Project Botanical Surveys*

### MONTANA TECHNOLOGICAL UNIVERSITY STUDENT NEWSPAPER THE TECHNOCRAT

Butte, Montana | Editor-in-Chief, January 2014 – May 2017  
*Journalism, Copy Editing, Hiring, Staff Management*

### MONTANA TECHNOLOGICAL UNIVERSITY DEPARTMENT OF BIOLOGICAL SCIENCES

Butte, Montana | Undergraduate Research Assistant, July 2014 – May 2015  
*Botany and Plant Ecology research, Apple Lab*

### THE UNIVERSITY OF KENTUCKY DEPARTMENT OF BIOLOGICAL SCIENCES

Glacier National Park, Montana | Undergraduate Research Assistant, August 2014  
*Cold Genomes Project, Hotaling Lab*

### THE LIVINGSTON ENTERPRISE

Livingston, Montana | General Assignments Reporter, June 2013 – August 2013  
*Investigative Journalism, Community Beat, Copy Editing*

## EDUCATION

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### UNIVERSITY OF WYOMING

Laramie, Wyoming

Ph.D. Ecology, November 2022

*Microbial Ecology and Data Science*

### MONTANA TECHNOLOGICAL UNIVERSITY

Butte, Montana

B.S. Cellular and Molecular Biology, minor in Technical Communication

*Highest honors*

## SELECTED PUBLICATIONS

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**Ricketts, M.,** Mackie, M., Surovell, T., and Ward, N., 2022. The influence of past of past and present environmental conditions on extant bacteria in buried soils at the La Prele mammoth site. *Under review.*

**Ricketts, M.,** Mackie, M., Kornfeld, M., Surovell, T., Minkley, T., Kelly, R., Shuman, B., and Ward, N., 2022. Variable microbial taxa importance in buried sediments at three archaeology sites in Wyoming. *In prep.*

**Ricketts, M.,** Mackie, M., Kornfeld, M., Surovell, T., Kelly, R., and Ward, N., 2021. Structure of Fungal and Bacterial Communities in Archaeological Soils Could Inform Regional Biomarker Analysis and Paleoclimate Reconstruction. American Geophysical Union Annual Meeting, New Orleans, LA.

**Ricketts, M.,** Ward, N., Mackie, M. and Surovell, T., 2021. Evaluating potential time signatures within extant microbial communities in stratified soils at the La Prele Mammoth site. Society for American Archaeology Annual Meeting, San Francisco, CA

**Ricketts, M.,** Ward, N., Mackie, M., and Surovell, T., 2020. Microbial community structure within stratified soils at the La Prele Mammoth site. Society for American Archaeology Conference, Austin, TX

**Ricketts, M.,** Ward, N., and Surovell, T., 2019. Analysis of microbial community structure in archaeological soils from the La Prele mammoth site. NSF-EPSCoR Annual Meeting, Columbia, SC

**Ricketts, M.,** and Ward, N., 2019. DNA-based determination of microbial community structure in soils from the La Prele Mammoth site. Society for American Archaeology Meeting, Albuquerque, NM

**Ricketts, M.,** Bayless, C., Black, M., and Pedulla, M., 2017. Structural differences between tape measure proteins of unique Actinobacteriophage clusters and two novel Montana Mycobacteriophages. SEA-Phages National Meeting, Howard Hughes Medical Institute, Sterling, VA

Lai, M., **Ricketts, M.,** Ward, N.L., and Robinson, T., 2022. Sources of spurious correlations in microbiome data. *Under review at Nature Methods.*

Apple, M. E., **Ricketts, M. K.**, Martin, A. C., & Moritz, D. J. (2022). Distance from Retreating Snowfields Influences Alpine Plant Functional Traits at Glacier National Park, Montana. In *Mountain Landscapes in Transition* (pp. 331-348). Springer, Cham.

Apple, M.E., **Ricketts, M.**, and Martin, A., 2019. Plant and microbial functional types at the snowfields and periglacial patterned ground of Glacier National Park. *Journal of Geographical Sciences*, 29(7): 1127-1141.

Ward, N., and **Ricketts, M.**, 2019. Genetic analysis of microbial community structure in soils from the Hell Gap Witness Block. Society For American Archaeology Conference, Albuquerque, NM

Apple, M.E. and **Ricketts, M.**, 2019. What drives the variation of plant functional traits on periglacial patterned ground and along elevational gradients? International Mountain Conference, Innsbruck, Austria

Apple, M.E., **Ricketts, M.**, and Carlson, L., 2015. Rhizomes and Roots of Rare Arctic-Alpine Snowfield Plants on the Edges of Retreating Snowfields at Glacier National Park, Montana. *Microscopy and Microanalysis* 21(S3): 709-710.

## **TEACHING EXPERIENCE**

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Flathead Biological Research Station Alpine Ecology, BIO 416  
*Head Instructor, Alpine Ecology Field Course, Glacier National Park*

University of Wyoming Microbial Diversity and Ecology, ECOL 5540  
*Graduate Teaching Assistant | Instructor, Analysis and Programming Laboratory*

University of Wyoming Introduction to Research and Analysis, LIFE 2100  
*Graduate Teaching Assistant | Assistant Instructor*

Ellbogen Center for Teaching and Learning  
*Teaching and Learning Seminar Completion*

University of Wyoming Learning Actively Mentoring Program (LAMP) Fellowship  
*Fellow, December 2020 – May 2022 | Teaching Certification*

Undergraduate Research Mentor, Ward Lab  
*Aided undergraduate students in completing research at the University of Wyoming*

## **COMMUNITY OUTREACH**

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WYOMING BIODIVERSITY INSTITUTE COMMUNITY OUTREACH PROGRAM FOR STEAM ENGAGEMENT (COPSE)

Wyoming | Resident Science Communicator, August 2021 – August 2022

*Planned and carried out outreach programs for students and the public throughout the state*

UNIVERSITY OF WYOMING PROGRAM IN ECOLOGY FINANCE COMMITTEE

Laramie, Wyoming | Committee member, May 2021—May 2022

*Managed finances for program*

UNIVERSITY OF WYOMING PROGRAM IN ECOLOGY CURRICULUM COMMITTEE

Laramie, Wyoming | Committee member, May 2020—May 2021

*Aided professors in developing curriculum and class requirements for program*

SCIENCE LOVES ART FERMENTATION FESTIVAL

Laramie, Wyoming | Event Planning Board Member, September 2020 – September 2021

*Served as a ‘resident scientist’ and answered fermented-food related questions by the general public as a part of a nonprofit science education organization, Science Loves Art. Also helped to organize the event and secure sponsorships.*

UNIVERSITY OF WYOMING CLUB TENNIS TEAM

Laramie, Wyoming | Travel Coordinator, May 2019 – May 2020

*Coordinated practices and frequent out-of-state travel for over 150 team members. UW’s club tennis team was voted Club Sport of the Year in 2019 and achieved Tier 1 status that same year*

UNIVERSITY OF WYOMING PROGRAM IN ECOLOGY ANNUAL RESEARCH SYMPOSIUM

Laramie, Wyoming | Event Organizer and Presenter, February 2019

*Organized catering for lunch and dinner, event space, program of events, and silent auction items for annual research symposium for ~150 staff, students, and members of the public*

WYOMING PRESS ASSOCIATION ANNUAL MEETING

Cheyenne, Wyoming | Science Journalism Panelist, January 2019

*Discussed questions from area journalists on interviewing scientists, reporting science and developing storylines on science research*

UNIVERSITY OF WYOMING PROGRAM IN ECOLOGY MENTORING PROGRAM

Laramie, Wyoming | Program Organizer, May 2018-May 2019

*Organized and planned events for mentoring program participants*

WYOMING STATE SCIENCE FAIR

Laramie, Wyoming | Science Fair Judge, March 2018

*Grades 9-12 Microbiology Division*

ECOFLIGHT

Jackson, Wyoming | Participating Journalist, September 2017

*Traveled to seven different counties in Wyoming via Cessna prop airplane to speak with county legislators and community members on different issues surrounding the preservation of Wilderness Study Areas in their county. Published an article in a Wyoming quarterly publication.*

UNION GOSPEL MISSION SEATTLE

King County, Washington | English Language Teacher for Syrian Refugees, March 2017

*Aided refugees with basic English language learning*

MONTANA TECH STATE SCIENCE FAIR

Butte, Montana | Science Fair Judge, April 2016, 2017  
*Grades 1-12, all divisions*

“PIKAS, POPPIES AND LILIES: IN A CLIMATE OF CHANGE” PHOTOGRAPHY EXHIBITION  
Butte, Montana | Photographer and Artist, January 2015  
*Displayed a collection of 18 original photos about 2014 Glacier National Park research project on campus to illustrate the effects of climate change on alpine flora and fauna in Glacier in order to raise awareness for the issue*

SHILOH HOUSE FOSTER CARE PROGRAM  
Denver, Colorado | Homework Tutor, March 2016  
*Aided foster children with math and science homework*

MONTANA TECH BIOLOGY CLUB  
Butte, Montana | President, January 2015- May 2017  
*In charge of organizing and scheduling service projects and activities for the club  
Community outreach includes organizing and participating in science outreach activities with elementary and middle school students in order to spark interest in STEM fields, particularly for women and underrepresented minorities*

NATIONAL SCIENCE FOUNDATION MONTANA MINDS SCHOLARSHIP PROGRAM  
Butte, Montana | Scholar, August 2013- May 2017  
*As a scholar in the Montana Minds program, presented at local high schools on how to apply for college scholarships and fund college education. Participated in community outreach activities in order to encourage high school students, particularly females, to pursue careers in STEM fields*

## **AWARDS AND FELLOWSHIPS**

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*\* denotes national award*

2016 Barry M. Goldwater Scholarship Honorable Mention\*  
2018 University of Wyoming Dean’s Award Recipient  
2018 University of Wyoming Arts & Sciences Seed Grant Recipient  
2019 University of Wyoming Botany Department Service Award  
2019 Roy J. Shlemon Center for Quaternary Studies Research Award  
2020 Aven Nelson Fellowship for Outstanding Research  
2020 University of Wyoming Excellence in Teaching Award  
2021 Roy J. Shlemon Center for Quaternary Studies Research Award  
2021 Aven Nelson Fellowship for Outstanding Research

## **PROFESSIONAL SOCIETY MEMBERSHIPS**

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American Geophysical Union  
Society for American Archaeology  
International Society for Microbial Ecology

## **ADDITIONAL SKILLS AND EXPERIENCE**

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- 5x Montana State FFA Champion in Native Plant Identification and Range Management 2009-2013

- Experience in scanning electron, transmission electron, phase contrast, and light microscopy
- PADI certified open water SCUBA diver
- Proficient in the use of Adobe Photoshop and InDesign
- Frequently use R, python, C++ and Perl programming language for daily research tasks
- Excellent writing, public speaking and interpersonal skills
- Significant backcountry hiking experience

## **REFERENCES**

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*Available upon request*