

Carley Kratz

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Professional Preparation

2024 M.A. Michigan State University, East Lansing, Michigan
(In Progress) Agriculture, Food & Natural Resources Education

2014 Ph.D. Michigan Technological University, Houghton, Michigan
Forest Science – *Summa Cum Laude*
GPA 3.98
Graduate Fellow, Department of Energy Office of Science

2009 B.S. University of Michigan, Ann Arbor, Michigan
Program in the Environment-Botany Specialization
GPA 3.75
Honors Program - High Honors

Certifications

2018-current Standard Teaching Certificate
Career and Technical Education-Biotechnology and Agriscience
Michigan Department of Education

2022-current Commercial Pesticide Applicators Certification
Regulatory (Government) Category
Michigan Department of Agriculture and Rural Development

2022-current Wild Mushroom Forager Certification
Michigan Department of Agriculture and Rural Development

2023-current Professional Geographic Information System (GIS) Certification
Michigan State University

2023-current Remote Pilot Certification for Drones
Federal Aviation Administration

Appointments and Experience

2015-current

Lenawee Intermediate School District, Instructor

Biochemical Technology (2015-2021) & Natural Resources (2021-Current)

- Developed curriculum using cutting edge technology and active learning techniques
- Teacher of the Year 2022
- School Improvement team leader
- FFA Advisor
- Tri-County STEM Fair Instructor, Organizer, & Judge
- Lake Erie and River Raisin Water Festival Organizer and Presenter
- Perkins V Career to Pathways Grant Natural Resources State Standards leader
- NOAA Sea Grant Shipboard Science for Great Lakes Literacy
- Great Lakes Bioenergy Research Center for Educators University of Wisconsin
- Lenawee County Chemistry Teacher's Network Co-Founder
- Mentor teacher to new instructors
- Summer Career Camp & Adult Education Instructor
- iChallengeU Teacher Leader with Anderson Development Chemical Company
- Learning Management Systems: Moodle, Canvas, Google Classroom

2015-Current

Adrian College, Adjunct Professor

Biology 101

- Developed curriculum and wrote course pack for Biology 101 class
- Supervised other faculty members in teaching additional lab sections
- Grew enrollment numbers of class
- Learning Management System: Blackboard

2015- 2018

Jackson College, Adjunct Professor

Environmental Science, Chemistry, Geology

- Taught independently and as a team
- Learning Management System: Moodle

Winter 2015

Siena Heights University, Adjunct Professor

Hydrogeology

- Co-taught with lead faculty
- Learning Management System: Angel

2014-2015

River Raisin Watershed Council, Program Director

- Work collaboratively with other nonprofits and government agencies
- Applied for funding through private and government grants
- Held semi-annual meetings of representative governments
- Gave educational presentations to various age groups
- Organized and trained other in macroinvertebrate sampling
- Organized roadside clean-ups

2009 - 2014

**Michigan Technological University & USDA Forest Service,
Undergraduate Research Supervisor**

- Designed and executed experiments on soil microbiology in Northern Michigan and at Harvard Forest
- Used biotechnology techniques including tissue culture, lipid extraction, gas chromatography, high pressure liquid chromatography, quantitative polymerase chain reaction, DNA and RNA extraction, enzyme activity assays
- Graduate Fellowship Department of Energy Office of Science
- Teaching Assistant in Soil Science developing online course work and laboratories
- Instructor at the Global Change Teacher's Institute and National Advanced Silviculture Program
- Member of the student government
- Mentor and Supervisor to Graduate and Undergraduate Students

2005 – 2009

**University of Michigan, Research Assistant
Ecology and Evolutionary Biology**

- Performed phospholipid fatty acid methyl ester extractions, gas chromatography, polymerase chain reaction, and horizontal gel electrophoresis to identify and quantify soil microorganisms
- Designed and implemented independent honors thesis on plant growth in Desert Grasslands of Arizona
- Research assistant studying entomology in coffee agroecosystem in Chiapas, Mexico

Synergistic Activities

2014-Current

Team Leader-Macroinvertebrate Sampling
River Raisin Watershed Council

2016-Current

Volunteer-Christmas Bird Count
Audubon Society

2015-2018

Representative-River Raisin Watershed Council

2014-2018

Director-Raisin Valley Land Trust

2014-2018

Director-Washtenaw County Conservation District

2014-2016

Lenawee County Solid Waste Planning Committee

Relevant Graduate and Post-Graduate Course Work

Introduction to GIS, Geographic Information Systems, Remote Sensing, Cartography, Educational Theory and Application of Experiential Learning, Youth Leadership: Theory and Practice, Soil Biogeochemistry, Great Lakes Bioenergy Research Institute, Advanced Methods in Mass Spectrometry, Biomolecular Chemistry I & II, Research Methods in Biomolecular Chemistry, Stable Isotope Ecology, Organisms in Their Environment (Physical Chemistry), Microbiology, Plant-Microbe Interactions, Microbial Physiology, Microbial Metagenomics, Advanced Terrestrial Ecology, Conservation Genetics, Wood in the Modern Ages, Plant Community Ecology, Applied Regression Analysis, Regression Analysis in the R Environment

Publications

Kratz, C.J. 2014. Impacts of Climate Change on Soil Microorganisms in Northern Hardwood Forests. Ph.D. Dissertation. Michigan Technological University.

Kane E.S., L R. Mazzoleni, **Kratz C.J.**, J.A. Hribljan, C.P. Johnson, T.G. Pypker, R. A. Chimner. 2014. Peat porewater dissolved organic carbon concentration and lability increase with warming: a field temperature manipulation experiment in a poor-fen. *Biogeochemistry*. **119**: 161-178.

Kratz, C.J., A.J. Burton. 2012. Fungal hyphal respiration shows potential signs of acclimation at Prospect Hill and Barre Woods soil warming experiments. Published abstract, annual Harvard Forest Research Symposium, Petersham, MA.

Kratz, C. 2009. Investigating a Possible Arrested Succession in a Desert Grassland Following Prescribed Burns: Muleshoe Ranch, Arizona. Undergraduate Senior Honors Thesis. University of Michigan Deep Blue.

Livingston, G., White, A. and **C. Kratz**. 2008. Indirect Interactions between Ant-Tended Hemipterans, a Dominant Ant *Azteca instabilis* (Hymenoptera: Formicidae), and Shade Trees in a Tropical Agroecosystem. *Environmental Entomology*. **37**(3): 734-740.

Research Presentations

Kratz, C.J. and J. Martin. 2023. Learning to do, doing to learn: Motivating future ecologists using citizen science. Ecological Society of America, Portland, OR.

Martin, J. and **Kratz, C.J.** 2023. Twenty years of stream search in southeast Michigan. National Water Quality Monitoring Conference, Virginia Beach, VA.

Kratz, C.J., A.J. Burton, E.A. Lilleskov. 2013. Soil microbial extracellular enzyme activities from a Northern temperate forest with experimental temperature and moisture manipulations. Annual Meeting of the Ecological Society of America, Minneapolis, MN.

Kratz, C.J., J. Roger, A.J. Burton. 2013. Fungal respiration shows potential signs of acclimation at long-term soil warming experiments in temperate forests. Ecosystem Science Center Poster Forum, Houghton, MI.

Kratz, C.J., J. Silva, E.A. Lilleskov, A.J. Burton. 2012. Seasonal trends dominate patterns of extracellular enzyme activity in soils from a climate change manipulation experiment. Department of Energy Office of Science Graduate Fellowship Symposium, Brookhaven National Laboratory, NY.

Kratz, C.J., A.J. Burton, E.A. Lilleskov. 2012. Soil enzyme activities vary seasonally and by treatment in the Ford Forestry Center climate change manipulation experiment. Ecosystem Science Center Poster Forum, Houghton, MI.

Kratz, C.J., A.J. Burton, E.A. Lilleskov. 2011. Fungal physiological responses to long-term soil warming. Harvard Forest Research Symposium. Harvard Forest, Petersham, MA.

Kratz, C.J., E.A. Lilleskov. 2011. Exploring the functional role of soil microorganisms under climate change conditions in a temperate forest. Annual Soil Metagenomics Workshop, Chicago, IL.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2011. Microbial metabolic responses to short-term soil warming in a temperate deciduous forest. Annual Meeting of the Ecological Society of America, Austin, TX.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2011. Carbon cycling in a changing climate: the role of soil microbial communities. Department of Energy Office of Science Graduate Fellowship Symposium, Oak Ridge National Laboratory, Oak Ridge, TN.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2011. Soil microbial community structure and functional responses to warming in a temperate forest. Ecosystem Science Center Poster Forum, Houghton, MI

Kratz, C.J. 2010. Soil microbial structure and function in a warming climate. Department of Energy Office of Science Graduate Fellowship Symposium, Argonne National Laboratory, Argonne, IL.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2010. Soil warming impacts on microbial community structure and function. Annual Soil Metagenomics Workshop, Argonne National Laboratory, Argonne Il.

Kratz, C.J., E.A. Lilleskov, A.J. Burton, S. Butler, and J.M. Melillo. 2010. Physiological responses of fungi to soil warming. Annual Meeting of the Ecological Society of America, Pittsburgh, PA.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2010. Impacts of climate change on soil microorganisms. Graduate Research Colloquium, Houghton, MI.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2010. Soil microbial community structural and functional responses to short-term warming in a temperate deciduous forest. Ecosystem Science Center Poster Forum, Houghton, MI.

Kratz, C.J., E.A. Lilleskov, A.J. Burton. 2009. Microbial Community Responses to Soil Warming. Ecosystem Science Center Poster Forum, Houghton, MI.

Kratz, C.J., K. McGuire, D.R. Zak. 2006. Influence of Air Pollutants on Mycorrhizae in Northern Temperate Forests. Michigan Undergraduate Research Forum, Lansing, MI.

Guest Lectures & Presentations

Hidden Lake Gardens Gardening Club. "River Raisin Macroinvertebrate Data". May 2023.

River Raisin Watershed Council. Semi-Annual Meeting Presenter. "Celebrating 20 Years of Adopt A Stream". April 2023.

River Raisin Institute. River Raisin Water Festival Organizer and Presenter for Lenawee County 5th graders; 2019-2023.

River Raisin Institute. Lake Erie Water Festival Organizer and Presenter for Monroe County 6th graders; 2014-2018.

Hidden Lake Gardens. Young Scientist Day Chemistry Presenter and Children's Garden Day Macroinvertebrate Sampling 2014-Current.

Jackson College. Environmental Microbiology lecture for General Microbiology Class. Dr. Badthke; 2014 & 2015.

Siena Heights University. Watershed Science and Environmental Justice for Social Justice and Environmental Studies Classes with a focus on endangered species. Dr. Easley; 2014 & 2015.

Lenawee County Intermediate School District Sustainable Future Center. Agro-ecology of

Fungi & Benthic Macroinvertebrates. Miss Lentz; 2014 & 2015.

Lenawee County Intermediate School District Tech Center. Biochemistry of Watershed Science. Mr. West; 2014.

Jackson Junior College. History and Current Science of the River Raisin Watershed. Mr. Zemper; 2015.

Stubnitz Environmental Education Center. Watershed Science hands-on presentation at Water Resources Day for all Hudson & Mason Area 5th graders; 2014.

Hidden Lake Gardens Children's Garden Day. Exploration of pond life with hands-on activities for children of all ages; 2014 & 2015.

River Raisin Watershed Council. Spring & Fall Meetings-Program Director's Updates beginning in 2014.

Monroe City Council. Watershed Council Projects and Goals; 2014.

Adrian Kiwanis Club. Watershed Science & Community Service Projects; 2014.

Mud Lake Association. Aquatic Invasive Plant Species Identification and Control; 2014.

Clark Lake Spirit Association. Led public Hearing on Ecology and Control of Invasive Eurasian Milfoil; 2014.

Dundee and Monroe Rotary Clubs. Watershed Council Projects and Goals; 2014 & 2015.

Lenawee and Monroe County Planning Commission Annual Dinners. Watershed Council work with Agriculture; 2015.

Farmer's Advisory Committee Luncheon and Tall Ship Sails. Introduction the River Raisin Watershed; 2014 & 2015.

Adrian Boys and Girls Club. Surface water model demonstrations; 2014 & 2015.

Adrian Public Library. Watershed Science & Rain Gardens; 2014 & 2015.

References

Ben Murray, Assistant Principal, Lenawee Intermediate School District
Principal and Supervisor
Email: ben.murray@lisd.us Telephone: 517-265-1654

Janet Salzwedel, Professor of Biology, Adrian College
Chair of Biology Department, Supervisor
Email: jsalzwedel@adrian.edu Telephone: 517-264-3928

Jim Martin, Professor of Biology, Adrian College
Lead Entomologist of River Raisin Watershed Council Adopt-A-Stream Program
Email: jmartin@adrian.edu Telephone: 517-264-3927

Sybil Kolon, Vice-Chair of the River Raisin Watershed Council
Former Chair of the River Raisin Watershed Council, Supervisor
Email: sybil.kolon@gmail.com Telephone: 734-646-4673

Steve May, Executive Director of the River Raisin Watershed Council
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