

# Mickey Jarvi

Ph.D. Forest Science

Lecturer in Natural Resources

Michigan Technological University

Office: 906-487-2596; cell: 906-369-4221, email: mpjarvi@mtu.edu

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## Appointments

<b>Lecturer in Natural Resources</b> Michigan Technological University Houghton, MI College of Forest Resources and Environmental Science	2019-Present
<b>Assistant Professor, Forestry</b> College of the Redwoods Eureka, CA Forestry and Natural Resources	2016-2019
<b>Research Associate - Postdoctoral</b> University of Washington Seattle, WA Civil and Environmental Engineering Supervisor: Dr. Rebecca Neumann	2016
<b>Graduate Research/Teaching Assistant</b> Michigan Technological University Houghton, MI School of Forest Resources and Environmental Science Advisor: Dr. Andrew Burton	2009-2015

## Education

<b>Michigan Technological University, Houghton, MI</b> Ph.D. – Forest Science Research – Ecological Responses of Sugar Maple Roots to Climatic Conditions Advisor: Dr. Andrew Burton	2012-2015
<b>Michigan Technological University, Houghton, MI</b> M.S. - Forest Ecology and Management Research – The Effects of a Changing Climate on Root Respiration of Woody Plants in Sugar Maple Forests and Northern Peatlands Advisor: Dr. Andrew Burton	2009-2011
<b>Michigan Technological University, Houghton, MI</b> B.S. - Forestry B.S. - Wildlife Ecology and Management Magna Cum Laude	2007-2009

**Academic/  
Teaching  
Experience**

Advisor:	Integrated Resource Assessment, MTU (FW 4830) 3 Credit (3 Recitation)	2020-Current
Lecturer:	Stand & Forest Modeling, MTU (FW4140) 2 Credits (1 Lecture, 2 Lab)	2020-Current
Lecturer:	Outdoor Recreation and Tourism, MTU (FW3510) 3 Credits (2 Lecture, 1 Recitation)	2020-Current
Lecturer:	Forest Management, MTU (FW5079) <b>Teaching evaluation*: Average 4.67</b> 2 Credits (1 Lecture, 1 Lab)	2019-Current
Lecturer:	Multi-resource Assessment, MTU (FW3190) <b>Teaching evaluation*: Average 4.65</b> 3 Credits (1 Lecture, 2 Lab)	2019-Current
Lecturer:	Communication for Natural Resources, MTU (FW 4800) <b>Teaching evaluation*: Average 4.32</b> 2 Credits (1 Lecture, 1 Recitation)	2019-Current
Lecturer:	Graduate Seminar, MTU (FW5800/FW6800) <b>Teaching evaluation*: Average 4.90</b> 1 Credit (1 Recitation)	2019-Current
Advisor:	Integrated Resource Assessment Data Collection, MTU (FW 4811)	2019-Current 1 Credit (1 Lab)
Professor:	Introduction to Wildlife Biology and Management, CR (FNR 87) 3 Credits (2 Lecture, 1 Lab)	2019
Professor:	Seminar in Forestry and Natural Resources, CR (FNR 3) <b>Teaching evaluation*: Average 4.9</b> 1 Credit (0.5 Lecture, 0.5 Lab)	2018-2019
Professor:	Timber Harvesting, CR (FNR10) <b>Teaching evaluation*: Average 4.8</b> 4 Credits (2 Lecture, 2 Lab)	2016-2019
Professor:	Introduction to Geospatial Concepts (FNR 31) Introduction to GIS, CR (FNR65) <b>Teaching evaluation*: Average 4.8</b> 3 Credits (2 Lecture, 1 Lab)	2016-2019
Professor:	Introduction to Remote Sensing, CR (FNR 33, FNR58) <b>Teaching evaluation*: Average 4.9</b>	2016-2019

	3 Credits (2 Lecture, 1 Lab)	
Professor:	Forest Health and Protection, CR (FNR60) <b>Teaching evaluation*: Average 5.0</b> 3 Credits (2.5 Lecture, 0.5 Lab)	2016-2019
Professor:	Wildland Fire, CR (FNR77) <b>Teaching evaluation*: Average 4.8</b> 2 Credits (1 Lecture, 1 Lab)	2016-2019
Professor:	Spatial Data Analysis in GIS, CR (FNR 32, FNR66) <b>Teaching evaluation*: Average 5.0</b> 3 Credits (2 Lecture, 1 Lab)	2016-2019
Professor:	Watershed Management, CR (FNR80) 3 Credits (2 Lecture, 1 Lab)	2016-2019
Professor:	Introduction to GPS, CR (FNR67) <b>Teaching evaluation*: Average 4.9</b> 1 Credit (0.5 Lecture, 0.5 Lab)	2016-2017
Guest Lecturer:	Biogeochemical Cycling in Soils and Forest Ecosystems, UW (SEFS 512)	2016
Instructor:	Vegetation of North America (Dendrology), MTU, (FW2010) <b>Teaching evaluation*: Average 4.8</b>	2015
Instructor:	Wildlife Habitat, MTU, (FW3600) <b>Teaching evaluation*: Average 4.4</b>	2015
Teaching Assistant:	Field Techniques, MTU, (FW2051)	2014
Teaching Assistant (2014)/Instructor (2015):	Biometrics and Data Analysis/ Forest Inventory and Analysis, MTU, (FW3200/FW5032) <b>Teaching evaluation*: Average 4.7</b>	2014-2015
Teaching Assistant/Instructor:	Vegetation of North America (Dendrology), MTU, (FW2010/FW5020) <b>Teaching evaluation*: Average 5.0</b>	2013
Co-Instructor:	Forest Ecophysiology Methods, MTU (FW5370)	2013
Co-Instructor:	Forestry Senior Capstone, MTU, (FW4810) Forest Carbon Group	2012
Co-Instructor:	Global Change Teacher Institute, MTU	2012-2014
Teaching Assistant:	Forest Ecology, MTU, (FW3020/FW5040) <b>Teaching evaluation*: Average 4.9</b>	2009-2013

Undergraduate Teaching Assistant: Inventory, Monitoring, and Data Analysis, MTU, (FW3200)	2009
Undergraduate Teaching Assistant: Vegetation Modeling, MTU, (FW4140)	2009
Undergraduate Teaching Assistant: Botany, MTU, (BL2160)	2008
Guest Lecturer: Wildlife Habitat, MTU, (FW2600)	2007

\* Teacher evaluations completed by students at the end of the semester using a scale of 1-5 where 5 = highest score. This score is an average of the question: *Taking everything into account, I consider this instructor to be an excellent teacher.* This was updated to an average of seven dimensions after 2015 which includes: *the instructor was enthusiastic about the subject matter of the course, the instructor communicated the course material clearly, the instructor engaged students by encouraging participation during class, the instructor engaged students by encouraging course preparation, reflection or other activities outside of class, the instructor provided timely feedback on my work, the instructor displayed a personal interest in students and their learning, and the instructor used technology appropriately* (MTU). Or an average across seven questions including: *my instructor presents material/lessons in an organized manner, my instructor uses class time effectively, my instructor makes reasonable provisions for difference in ability, experience, physical disability, and cultural values, my instructor is knowledgeable about the course material, my instructor encourages student engagement, my instructor demonstrates enthusiasm for subject matter, and the course materials are clear and helpful* (CR).

### **Professional/ Academic Honors**

Top 10% of instructors for Fall 2015 (1 of 91 to receive this award), MTU	2015
Outstanding Graduate Student Service Award, SFRES, MTU, MI	2015
Outstanding Graduate Teaching Award, MTU, MI	2014
Graduate Teaching Assistant of the Year, SFRES, MTU, MI	2010, 2012, 2014, 2016
Publication selected for F1000 (online library of the top two percent of articles in biology and medicine), "Chronic N Deposition Alters Root Respiration-Tissue N Relationship in Northern Hardwood Forests"	2012
Best Paper Award, SSSA Annual Meeting, Long Beach, CA	2010
Outstanding Graduate Student of the Year Honorable Mention, MTU, MI	2010
Magna Cum Laude, B.S., MTU, MI	2008
Xi Sigma Pi, Forestry Honor Society (Forest Ranger in 2013)	2008-Present
Honors Program, Edison College, FL	2002

### **Graduate Students**

Rachael Wilbur, Master's of Applied Ecology, MTU	Anticipated 2022
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### **Mentoring of Undergraduate Researchers/Work Experience**

Degree and career advising I have met with immeasurable students during my graduate, post-doctoral,	2009-Present
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and professorship time to advise on both degree programs at Michigan Tech, University of Washington, University of Alaska Fairbanks, and College of the Redwoods but also career pathways in the fields of forestry, forest ecology, wildlife ecology, wildland fire, and GIS. This has been both an informal and formal mentoring role.

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|---|-------------|
| <p>Charles Davies – Undergraduate – College of the Redwoods<br/>           Redwoods Parks Conservancy and Redwood National Park<br/>           Charles worked with the NPS using GIS technologies and ArcMAP to edit and digitize stream networks throughout the park. Charles also updated stream attributes collected over 3 decades with the assistance of park service employees. Charles is currently a student at CR.</p>   | <p>2019</p> |
| <p>Will Bruce– Undergraduate – College of the Redwoods<br/>           Redwoods Parks Conservancy and Redwood National Park<br/>           Will worked with the NPS using GIS technologies and ArcMAP to edit and digitize stream networks throughout the park. Will also updated stream attributes collected over 3 decades with the assistance of park service employees. Will is currently a student at CR.</p>   | <p>2019</p> |
| <p>Megan McEldowney – Undergraduate – College of the Redwoods<br/>           Sequoia Orchids &amp; Redwoods<br/>           Megan worked in the greenhouse operations with clonal coast redwood tissue samples. Megan is currently a student at CR and is transferring to Oregon State University to pursue a B.S. in Forestry.</p>  | <p>2018</p> |
| <p>Ross Eskra – Undergraduate – College of the Redwoods<br/>           Career Work Experience with CalFire<br/>           Ross worked on a wildland fire engine crew during the Fall 2017 semester to further understand wildland fire behavior in the state of California. Ross currently works full time with CalFIRE.</p>  | <p>2017</p> |
| <p>Kylee Durrett – Undergraduate – College of the Redwoods<br/>           Career Work Experience with Green Diamond Resource Company<br/>           Kylee worked for Green Diamond over the course of the summer to increase her skillset in forestry/natural resource management and also to assist in data collection to prepare timber harvest plans which are required by law to manage private forestry in the state of California. Kylee is currently pursuing a B.S. in Forestry from Humboldt State University.</p> | <p>2017</p> |
| <p>Jesse Turner – Undergraduate – University of Washington<br/>           DOE Funded research project in Fairbanks Alaska.<br/>           Jesse complimented my research in a thermokarst bog by investigating methane/carbon dioxide emissions to try and determine methane consumption and production rates. Jesse is currently working full-time in the field north of Seattle, WA.</p>  | <p>2016</p> |

**Co-Mentoring of Undergraduate Researchers/Work Experience**

- Peter Hoch – Undergraduate – Michigan Technological University 2015  
 NSF funded Research Experiences for Undergraduates  
 “Response of root and soil respiration, and N mineralization rates after the conclusion of a 4 year soil warming study  
 Peter’s work followed up Jarvi & Burton’s work at the SMART experiment. Peter is currently a graduate student at the University of Idaho pursuing a M.S.
- Michael Stanley – Undergraduate – Michigan Technological University 2014  
 NSF funded Research Experiences for Undergraduates  
 “Chronic N addition effects on wood decomposing fungi”  
 Michael’s work directly strengthened Bethany Lyon’s MS work and a publication is in preparation which will include our analysis.  
 Michael was a seasonal FIA employee with the US Forest Service but is now a permanent US Forest Service employee now at the Fishlake National Forest in Utah.
- Ethan Bell – Undergraduate – Michigan Technological University 2013  
 NSF funded Research Experiences for Undergraduates  
 “Effect of chronic N and salt additions on canopy phenology and soil solution DOC”. Ethan is now a full-time utility forester in California.
- Kenneth Carruthers – Undergraduate – Michigan Technological University 2011  
 NSF funded Research Experiences for Undergraduates  
 “Effects of changing water levels in a northern poor fen on fine-root biomass of *Picea mariana*, *Larix laricina*, and *Chamaedaphne calyculata*”  
 Kenneth’s work led to a presentation at the Ecological Society of America.  
 Kenneth is now a full-time ecologist with Upper Peninsula Power Company in Michigan.
- Gerald Jondreau – Undergraduate – Michigan Technological University 2010  
 NSF funded Research Experiences for Undergraduates  
 “Cross ecosystem difference in fine-root biomass, fine-root respiration, fine-root N concentration in 6 different forested ecosystems in the Upper Great Lakes”  
 Gerald’s work was presented at the Ecological Society of America Conference.  
 Gerald was the tribal forester of the Keweenaw Bay Indian Community. but is now the Director of Recruiting at the SFRES Michigan Tech.
- Alex Mehne – Undergraduate – Michigan Technological University 2010  
 MTU funded Summer Undergraduate Research Fellowship  
 “Investigation of tree species from a lower latitude forest cover type planted in a northern region after 20 years”. Alex is the Forestry Program Manager for the Bois Forte Tribal Government in Northern Minnesota.
- Julie Jarvey – Undergraduate – Michigan Technological University 2009  
 NSF funded Research Experiences for Undergraduates  
 “Effects of nitrogen fertilization on sugar maple root biomass, N

concentration, and fine-root respiration”

Julie’s work led to a publication in *Global Change Biology* and her work was presented at the Ecological Society of America Conference. Julie finished a M.S. at the University of Michigan and is currently a Ph.D. student at Michigan State University.

### Professional Affiliations

- Ecological Society of America (2010 - present)
- Soil Science Society of America (2011 - present)
- Society of American Foresters (2008 - present)
- American Tree Farm Inspector
- International Wolf Center, Ely, MN (2008-2009)
- MTU Society of American Forester’s Forestry Club
  - Student Chapter of Society of American Foresters

### Service

GenEd Camp Coordinator – MTU	2019-Present
General Education Council – MTU	2019-Present
General Education CFRES liaison – MTU	2019-Present
Xi Sigma Pi Faculty Advisor – MTU	2019-Present
The Nature Conservancy Site Supervisor – MTU	2020-Present
Forestry and Natural Resources Advisory Committee – CR	2016-2019
Bookstore Task Force - ad hoc committee organized by College President	2018-2019
Academic Standard and Policy Committee – CR	2017-2019
Program Review Committee – CR	2017
Enrollment Management Committee – CR	2017-2018
Graduate student representative for the reappointment committee for the Dean and associate Dean at MTU-SFRES	2015
Graduate student representative for the Forest Hydrology search committee at MTU-SFRES	2013
Undergraduate student representative MTU- SFRES Council advisory to the Dean	2007-2008

### Peer-Reviewed Publications (\*Undergraduate mentees)

**Jarvi M.P.**, Burton A.J. (2020) Root respiration and biomass responses to experimental soil warming vary with root diameter and soil depth. *Plant Soil*. <https://doi.org/10.1007/s11104-020-04540-1>

**Jarvi M.P.**, Burton A.J. (2018) Adenylate control contributes to thermal acclimation of sugar maple fine root respiration in experimentally warmed soil. *Plant, Cell and Environment*, 41(3): 504-516.

**Jarvi M.P.**, Burton A.J. (2013) Acclimation and soil moisture constrain sugar maple root respiration in experimentally warmed soil. *Tree Physiology*, 33(9): 949-959.

Burton A.J., Jarvey J.C.\*, **Jarvi M.P.**, Zak D.R. Pregitzer K.S. (2012) Chronic N deposition alters root respiration-tissue N relationship in northern hardwood forests. *Global Change Biology*, 18(1): 258–266.

### Other Publications

**Jarvi M.P.** (2015) Ecophysiological Responses of Sugar Maple Roots to Climatic Conditions. Ph.D. Dissertation. Michigan Technological University.

**Jarvi M.P.** (2011) The effects of a changing climate on root respiration of woody plants in sugar maple forests and northern peatlands. Thesis. Michigan Technological University

## **Presentations**

### ***Scientific Meetings and Conferences:*** (\*Undergraduate mentees)

Burton, A.J., M.A. Cavaleri, **M.P. Jarvi**, and A.R. Collins. 2018. Responses of root system respiration and stem sap flux to experimental soil warming in a sugar maple forest. Oral presentation and published abstract at the Ecological Society of America Annual Meeting, New Orleans, LA.

Hoch P.J.\*, Burton A.J., **Jarvi M.P.** (2017) Reversibility of warming-induced changes in sugar maple root and soil respiration. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Portland, OR.

**Jarvi M.P.**, Burton A.J. (2015) Ecosystem root respiration in sugar maple forests increases with temperature within populations but not across populations: Results of a range-wide study. Paper presentation and published abstract, annual meeting of the Ecological Society of America, Baltimore, MD.

Stanley, M.A.\*, **Jarvi M.P.**, Burton A.J. (2015) Reduced decomposition of coarse-woody debris under simulated chronic N deposition is associated with lower fungal biomass. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Baltimore, MD.

Burton A.J., **Jarvi M.P.**, Griffith K.M. (2015) Relative responses of soil and root respiration to soil warming suggest little soil C loss after the initial two years. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Baltimore, MD.

**Jarvi M.P.**, Burton A.J. (2014) Sugar maple fine-root respiration is mechanistically constrained by adenylyate control after 3 years of experimental soil warming. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Sacramento, CA

Burton A.J., **Jarvi M.P.**, Kratz C.J. (2014) Root and mycorrhizal acclimation to increased temperature in experimentally warmed northern forest. Paper presentation and published abstract, annual meeting of the Ecological Society of America, Sacramento, CA

**Jarvi M.P.**, Burton A.J. (2013) Reduced non-structural carbohydrate concentration and temperature acclimation in sugar maple roots following experimental warming. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Minneapolis, MN

**Jarvi M.P.**, Burton A.J. (2012) Response of ecosystem fine root respiration to soil warming in a sugar maple forest. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Portland, OR

Carruthers K.\*, **Jarvi M.P.**, Burton A.J. (2012) Effects of water level on specific root respiration and biomass of *Chamaedaphne calyculata*, *Larix laricina*, and *Picea mariana* in a poor fen peatland. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Portland, OR

**Jarvi M.P.**, Burton A.J. (2012) Partial Temperature Acclimation of Fine Root Respiration in Sugar Maple During the First Year of Soil Warming. Poster presentation and published abstract, annual meeting of the Scaling Root Processes: Global Impacts Workshop, Washington D.C.

**Jarvi M.P.**, Chimner R.A., Burton A.J. (2011) Increases in woody specific root respiration found with altered water depth in a northern peatland. Poster presentation and published abstract, annual meeting of the Soil Science Society of America National Conference, San Antonio, TX.

Burton A.J., **Jarvi M.P.**, Griffith K.M., Kratz C.J. (2011) Responses of the Components of Northern Hardwood Soil Respiration to Experimental Warming and Moisture Additions. Paper presentation and published abstract, annual meeting of the Soil Science Society of America National Conference, San Antonio, TX.

**Jarvi M.P.**, Burton A.J. (2011) Short-term metabolic response of sugar maple roots to soil warming. Paper presentation and published abstract, annual meeting of the Ecological Society of America, Austin, TX.

Jondreau G.P.\*, **Jarvi M.P.**, Burton A.J. (2011) Influence of root biomass and specific respiration rates on variation in ecosystem level fine root respiration among forest types. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Austin, TX.

Burton A.J., **Jarvi M.P.**, Jarvey J.C.\* (2011) Long-term NO<sup>3</sup>- additions alter root respiration:tissue N relationships in northern hardwood forests but not ecosystem root respiration. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Austin, TX.

Burton A., McDonald R., **Jarvi M.**, Butler S., Melillo J. (2010) Response of fine root respiration and root N to soil warming in hardwood forests. Paper presentation and published abstract, annual meeting of the Ecological Society of America, Long Beach, CA.  
*Awarded Best Paper*

**Jarvi M.P.**, Burton A.J. (2010) Response of northern hardwood root respiration to warmer soils. Poster presentation and published abstract, annual meeting of the Ecological Society of America, Pittsburg, PA.

### ***Other Presentations***

Hoch P.J.\*, Burton A.J., **Jarvi M.P.** (2016) Reversibility of Warming Responses of Sugar Maple Root and Soil Respiration to the Cessation of Experimental Warming. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

**Jarvi M.P.**, Burton A.J. (2015) Below-ground C allocation responses to climatic variation across sugar maple's native range. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.  
*Merit Award for Best Poster*

**Jarvi M.P.**, Burton A.J. (2014) Sugar maple fine-root respiration is mechanistically constrained by adenylate control after 3 years of experimental soil warming. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

*Merit Award for Best Poster*

**Jarvi M.P.** (2013, 2012, 2011) The effects of warmed soil on sugar maple growth and maintenance. Lecture presentation at National Advanced Silviculture Program, Michigan Tech University, MI, 2013

**Jarvi M.P.**, Burton A.J. (2013) Reduced non-structural carbohydrate concentration and temperature acclimation in sugar maple roots following experimental warming. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

**Jarvi M.P.**, Burton A.J. (2012) Partial Temperature Acclimation of Fine Root Respiration in Sugar Maple During the First Year of Soil Warming. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

**Jarvi M.P.** (2011) The future for wetlands. Lecture presentation at Michigan Department of Natural Resources and the Environment Seminar, MI.

**Jarvi M.P.**, Burton A.J. (2011) Sugar maple root respiration shows no short-term acclimation to soil warming. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

*Grand Prize for Best Poster*

**Jarvi M.P.**, Burton A.J. (2010) Response of northern hardwood root respiration to warmer soils. Poster presentation at the Michigan Technological University Capital Campaign, MTU, MI.

**Jarvi M.P.**, Burton A.J. (2010) Temperature acclimation of fine roots to soil warming in a sugar maple dominated northern hardwood forest. Poster presentation at Ecosystem Science Center Graduate Research Forum, MTU, MI.

*Merit Award for Best Poster*

## Reviewed Manuscripts

Environmental and Experimental Botany	1
New Phytologist	1
Plant and Soil	2
Tree Physiology	1
Journal of Forestry	1 (2020)

## Grants

California State University Agricultural Institute (CSU\_AGI), **\$42,540** 2019  
A remote sensing approach for early detection and mapping of spatial patterns of Black Bear bark stripping in Coast Redwoods to facilitate control measures  
PI: Gwenzi D. (HSU), CO-PI: Maddurapperuma B (HSU), **Jarvi M.** (CR),  
Lamphear D. (Green Diamond Resource Company), Higley M.  
(Hoopa Tribal Forestry.Wildlife)

California Community College Agriculture, Water and Environmental Technology Grant, **\$6,000** 2018

Purchase multiresolution imager and drone while also developing curriculum for new Drone Academy course.

California Community College Strong Workforce Program, <b>\$130,190</b> Image capture and surveying with the use of high-tech drones. PI: <b>Jarvi M.</b> , CO-PI: Glavich D., Rulofson F.	2016
Michigan Technological University, Graduate Student Government, <b>\$250</b> , Graduate Travel Grant, MTU, MI	2015
Ecosystem Science Center, <b>\$1,000</b> , Graduate Research Grants, MTU, MI Using Genetic Markers to Assess Population Differences in Root System Responses to Temperature across the Native Range of Sugar Maple	2015
Ecosystem Science Center, <b>\$500</b> , Graduate Travel Grant, MTU, MI ESA National Conference, Sacramento, CA Sugar maple fine-root respiration is mechanistically constrained by adenylate control after 3 years of experimental soil warming	2014
Ecosystem Science Center, <b>\$500</b> , Graduate Travel Grant, MTU, MI ESA National Conference, Minneapolis, MN Reduced non-structural carbohydrate concentration and temperature acclimation in sugar maple roots following experimental warming	2013
Ecosystem Science Center, <b>\$625</b> , Graduate Research Grant, MTU, MI Fine root respiration and nutrient cycling across sugar maple's native range	2012
Ecosystem Science Center, <b>\$500</b> , Graduate Travel Grant, MTU, MI ESA National Conference, Portland, OR Response of ecosystem fine root respiration to soil warming in a sugar maple forest	2012
Ecosystem Science Center, <b>\$500</b> , Graduate Travel Grant, MTU, MI SSSA National Conference, San Antonio, TX Increases in woody specific root respiration found with altered water depth in a northern peatland	2011
Horner Northern Hardwood Research Fellowship, <b>\$2,000</b> Research in sugar maple dominated northern hardwood forest to investigate effects of climate change on net primary productivity	2010
Ecosystem Science Center, <b>\$1,000</b> , Graduate Research Grants, MTU, MI Respiration and temperature acclimation of woody tree roots in a northern peatland system	2010

## Research Experience

**College of the Redwoods, Humboldt State University,** **2018-Present**  
**and Green Diamond Resource Company**

We are developing a method of using drones with multispectral and hyperspectral capabilities to identify black bear damaged trees throughout managed timberlands of coast redwood and coast Douglas-fir. Black bears in recent years have developed a habit of stripping the bark from redwood and Douglas-fir

to reach the sugary phloem and thus can girdle the trees or at least affect timber value. We are hoping to be able to identify these damaged trees fast enough to be able to harvest them before their value as a timber resource declines.

**Humboldt State University and College of the Redwoods Eelgrass study 2018- Present**

I was the lead PI for multispectral image capture of eelgrass in Humboldt Bay CA during negative low tides to further develop NDVI (normalized difference vegetation indices) to determine the extent and health of the eelgrass beds throughout the bay. Eelgrass is an indicator species of a healthy aquatic environment and is an important wildlife forage.

**Postdoctoral Research Associate, University of Washington 2016**

Project began in January 2016 and involved investigating methane oxidation of wetland plants in a thermokarst bog in Fairbanks Alaska and how this will be affected under future climate conditions. I was instrumental in developing a study to investigate the areal extent and influence of herbaceous and non-herbaceous plants on methane and CO<sub>2</sub> production in a melting thermokarst bog. I also took images of an oxygen sensitive plate and injected O<sub>2</sub> gas below the water surface to measure O<sub>2</sub> consumption in this melting environment. Finally, I measured CO<sub>2</sub> efflux from the bog with the use of an infrared gas analyzer and CH<sub>4</sub> with the use of a gas chromatograph.

**TRACE (tropical warming responses to altered climate experiment), 2014-2015  
Sabana Field Station, Puerto Rico, Research Assistant**

TRACE is the first ever warming experiment to be conducted in a tropical ecosystem. I assisted PIs Molly Cavaleri (MTU), Sasha Reed (USGS), and Tana Wood (USDA Forest Service) in developing a protocol to measure root respiration of tropical trees at their study site in Puerto Rico. I also assisted an engineer at MTU in developing an instrument to warm tropical tree leaves in the field with the use of heating pads installed beneath the surface of the leaf. This instrumentation will be field tested at the USFS Northern Research Station in Houghton Michigan at a tower site in a sugar maple and northern red oak forest for field testing before being deployed in Puerto Rico.

**Sugar maple native range transect study, Midwestern United States, Ph.D 2012-2015**

Determine response of sugar maple fine-root respiration and root biomass throughout native sugar maple range.

I designed and implemented the layout of the 16 study sites that include collaboration with the Canadian Forestry Department, Superior National Forest, Shawnee National Forest, Hoosier National Forest, Wisconsin Department of Natural Resources, and several nature preserves to conduct the study. I measured root respiration at all sixteen sites 3 times during 2014 across 9 days each. Root biomass cores were collected during the final transect trip.

**SMART (sugar maple altered rainfall and temperature) experiment, 2009-2015  
Ford Forestry Center soil warming study, Alberta MI, Ph.D., M.S.**

Soil warming in natural sugar maple forest to investigate responses of belowground C cycling and ecosystem productivity to elevated soil temperature.

I constructed the infrastructure needed to warm and add water to multiple 10 m x 10 m treatment plots in a mature sugar maple forest. I conducted root respiration, soil respiration, root biomass, root N concentration, aboveground tree growth, root non-structural carbohydrate analysis, root N mineralization and tested the roles of adenylate control and substrate limitation as mechanisms for acclimation of root respiration.

**Northern peatland woody plant encroachment study, Northern MI, M.S. 2010-2011**

Examination of woody plant encroachment into peatlands due to changes in

water level.

I created the study design and conducted root respiration, root biomass in a northern poor fen.

**Great Lakes Forest Ecosystem Cross-study, Northern MI, M.S. 2009-2011**

Cross-ecosystem study of seven different forest cover types common in the upper Great Lakes region.

Assisted in study design and implementation. I conducted root respiration, soil and air temperature collection, aboveground tree growth, and leaf litter collection.

**Michigan Gradient study, various sites across MI, B.S., M.S., Ph.D. 2007-2015**

Study designed to examine nitrogen deposition across latitudinal gradient, but now focuses on climate change.

Assisted in annual aboveground tree growth data collection on 24 – 30 m x 30 m plots in four mature sugar maple dominated forests across a latitudinal gradient in Michigan. I conducted root respiration, soil respiration, temperature and soil moisture data, leaf litter collection, and belowground soil water collections with lysimeters. In 2014, I assisted an REU student to determine fungal biomass in coarse woody debris colorimetrically. We conducted an in depth literature review and modified previous laboratory procedures to accurately digest and measure chitin from fungal cell walls.

**Winter deer yard study, various sites across Michigan, B.S. 2007**

Investigate changes in deer pressure on various forest cover types.

I worked with a graduate student across several sites in hemlock and maple forest across Western Upper Michigan. Collected deer pellets, vegetation surveys, aboveground tree growth, and fish-eye photography of forest canopy.

**Harvard University soil warming study, Petersham MA, M.S. 2009**

Helped assess root respiration in long-term soil warming experiment designed to examine changes in ecosystem function to changes in soil temperature.

Conducted root respiration and root N concentration in 30 m 30 m soil-warmed plots in central Massachusetts.

**Aspen FACE, Rhinelander, WI, Research Assistant 2010-2011**

Worked in several 30 m diameter circular plots with air treatments including: ambient, elevated CO<sub>2</sub>, elevated O<sub>3</sub>, and elevated CO<sub>2</sub> + elevated O<sub>3</sub>. Conducted soil respiration, withdrew air samples to create keeling curves of <sup>13</sup>C from soil respiration.

**U.S. Forest Service, Timber Crew, Boise National Forest, ID, G.S. 5 2008**

I marked timber in selection harvest and shelterwood cuts in ponderosa pine and Douglas-fir dominated forests. Conducted timber and forest fire fuel-load surveys which included: aboveground tree growth, increment boring, habitat typing, and coarse woody debris transects.

**Research Interests**

- Application of multispectral and hyperspectral imagery attached to unmanned aerial vehicles (drones) to forestry and natural resource issues
- Adapting forest and natural resource management to address climate change
- Forest Ecology with an emphasis with belowground processes
- Forest Ecophysiology
- Forest response to global climate change
- Tree species native range differences in nutrient cycling
- Nutrient cycling in forested systems

- Belowground biogeochemistry

### **Professional Licenses**

American Tree Farm Inspector

2008-Present

### **Professional Websites**

ResearchGate Profile

[https://www.researchgate.net/profile/Mickey\\_Jarvi](https://www.researchgate.net/profile/Mickey_Jarvi)

Google Scholar

<https://scholar.google.com/citations?user=e9oITjgAAAAJ&hl=en&oi=ao>