**Mara Lee Cashay (Cloutier)**

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**ASU Box 06092, Boone, NC, 28608**

**Education:**

**Appalachian State University,** Boone, NC. M.S. in Biology, anticipated graduation August, 2016

* Concentration: Geomicrobiology

**University of North Carolina-Wilmington,** Wilmington, NC. B.S. in Biology, 2014

**Professional Work Experiences:**

**Graduate Research Assistant,** Dr. Mary Ann Bruns Lab, [mvb10@psu.edu](mailto:mvb10@psu.edu)

* Department of Ecosystem Science and Management, The Pennsylvania State University, August 2016-present

**Adjunct Faculty, Microbiology Laboratory Bio3308-**Section 201

* Department of Biology, Appalachian State University, May 2016-June 2016
  + Trained biology students how to use aseptic techniques when performing research on microbes and facilitated the students with in lab exercises and independent projects.

**Graduate Research Assistant**, Dr. Suzanna Bräuer Lab, brauersl@appstate.edu

* Department of Biology, Appalachian State University, May 2014-August 2016
  + Investigated the effects of exogenous carbon sources on the microbial ecology among manganese oxide deposits within caves of the southern Appalachian Mountains.

**Graduate Teaching Assistant for Bio1203**-Biology in Society; Sections: 109, 112, 124, and 127.

* Department of Biology, Appalachian State University, August 2014- present
  + Demonstrated how the process of science can be applied to career pathways other than biology and how scientific research can be applicable to the health and well-being of students and their environments.

**Product Developer for Bio1203**- Biology in Society

* Department of Biology, Appalachian State University, July 2015-August 2015
  + Created valuable resources for students to utilize when executing their assignments.

**Undergraduate Research Assistant**, Dr. Patrick Erwin Lab, erwinp@uncw.edu

* Department of Biology and Marine Biology, University of North Carolina-Wilmington, January 2014-May 2014
  + Operated independently to determine the cyanobacterial symbionts that colonized sponge tissues in the Bahamas.

**Grants and Awards:**

**Office of Student Research Travel Grant,** Appalachian State University, 2016-$250

**Office of Student Research Travel Grant,** Appalachian State University, 2015-$250

**On To the Future Program Travel Grant,** Geological Society of America, 2015-$525

**Office of Student Research,** Appalachian State University, 2015, Research Grant-$300

**Philip M. Smith Graduate Research Grant for Cave and Karst Research,** Cave Research Foundation, 2015-$2500

**Graduate Student Research Grant,** Geological Society of America, 2015-$1425

**Creating a Healthy, Just and Sustainable society,** Appalachian State University, 2014, Research Grant-$496

**Office of Student Research,** Appalachian State University, 2014, Research Grant-$300

**Cratis D. Williams Graduate Research Grant,** Appalachian State University, 2014-$496

**Graduate Student Association Senate,** Appalachian State University, 2014, Research Grant-$200

**Center for the Support of Undergraduate Research and Fellowships**, University of North Carolina- Wilmington, 2014-$300

**Dean’s list**, University of North Carolina-Wilmington, 2013

**Professional Activities:**

**Mara Cloutier**, Andrew Hughes, Michael Carson, Sarah K. Carmichael, Suzanna L. Brauer, 2016, Caves, carbon, enzymes, manganese: spelunking my way through the biogeochemical cycling web, American Society for Microbiology (Alleghany Branch)

Hiroyuki Kashima, Arnab Bhowmik, **Mara Cloutier,** Emily Ball, John Regan, Mary Ann Bruns, 2016, Metagenomic analyses of prokaryotic functional genes increase understanding of nitrogen cycling: the case of nrfA in soils and bio-wastes, American Society for Microbiology (Alleghany Branch)

**Mara L. Cashay**, Sarah K. Carmichael, Michael A. Carson, Suzanna L. Brauer, 2016,Mn-oxidizing microbial community responses to exogenous carbon in caves of the southern Appalachian Mountains, Annual Celebration of Student Research and Creative Endeavors

**Mara L. Cashay**, Sarah K. Carmichael, Michael A. Carson, Suzanna L. Brauer, 2016, Mn-oxidizing communities in caves of the southern Appalachian Mountains, Southeastern Biogeochemistry Symposium, p. 24

Andrew B. Hughes, **Mara L. Cashay**, Sarah K. Carmichael, Suzanna L. Brauer, 2016, Mn-oxidizing isolates affiliated with genera not previously known to contain Mn-oxidizers, Southeastern Biogeochemistry Symposium, p. 21

**Mara L. Cashay**, Sarah K. Carmichael, Bryan T. Zorn, Suzanna L. Brauer, 2015, Impact of exogenous nutrients on Mn-oxidizing microbial consortia among caves of the southern Appalachian Mountains, Geological Society of America p. 56

**Mara L. Cashay**,Sarah K. Carmichael, Bryan T. Zorn, Michael A. Carson, Nathan Basiliko, SuzannaL. Bräuer, 2015, Response of bacterial Mn(II)-oxidizing consortia to exogenous carbon sources in caves in the southern Appalachian Mountains, American Society for Microbiology (North Carolina Branch) p. 10

**Mara L. Cashay**,Sarah K. Carmichael, Bryan T. Zorn, and SuzannaL. Bräuer, 2015, Impact of exogenous nutrients on biotic Mn(II) oxidation and biogeochemical cycling among caves of the Southern Appalachian Mountains, Southeastern Biogeochemistry Symposium, p. 11

**Mara L. Cloutier**, Sarah K. Carmichael, Bryan T. Zorn, and Suzanna L. Bräuer., 2014,

Illumina sequencing of bacterial and fungal populations associated with manganese oxide deposits among caves in the southern Appalachian Mountains, American Society for Microbiology (North Carolina Branch) p. 18

Geological Society of America (2014-present)

National Speleological Society (2014-present)

National Cave and Karst Research Institute (2014-present)

Biology Graduate Student Association (2014-present)

American Society for Microbiology-North Carolina Branch, Boone, N.C.(2015)

Caving with Scientists (2014)

**Technical Expertise:**

***Microbial Ecology***

Illumina prep, design of culture media, aseptic techniques, anaerobic culturing, DNA extraction, purification, and quantification, PCR, DNA sequencing, phylogenetic analysis

***Microscopy***

SEM-EDS, Light Microscopy

***Computer Skills***

Linux, MOTHUR, QIIME, Adobe Illustrator, Adobe Photoshop, R, C++, PHYLIP, PC-ORD

***Biogeochemistry***

Gas Chromatography, Ion Chromatography, TC and TN analysis, N mineralization, soil respiration

**Advising:**

***Undergraduates at Appalachian State University:***

2015-2016 Austin Lubkemann, *Isolation of anaerobic bacteria from peat in North Carolina peatbogs*

2015 Javier Cattle, *Culturing of Mn(II)-oxidizing fungi from caves in the southern Appalachian Mountains*

2014-2015 Jeffrey Mudgett, *Field analysis and sample collection in caves in the southern Appalachian Mountains*

2014-2016 Andrew Hughes, *Isolation and identification of Mn(II)-oxidizing bacteria and fungi from caves in the southern Appalachian Mountains*

2014-2016 Jacob Montgomery, *Identifying the Mn(II)-oxidizing potential of bacteria and fungi in the presence of heavy metals*

2014 Michael Rojas-Steinbrecher, *Field analysis and culturing of Mn(II)-oxidizing microbes in caves of the southern Appalachian Mountains*