**Rachel M. Laker**

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| **Education**  **University of Wyoming (2016-2018)**  Masters of Science in Geology (GPA 3.89)  (Anticipated Graduation in May 2018) | **Miami University (2012-2016)**  ­Bachelors of Science in Geology (GPA 3.74)  Bachelors of Music in Horn Performance (GPA 3.99) (Obtained simultaneously with dual departmental honors) |

**Course Work**

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| Ecology as a Discipline | Physical Geology | Contaminant Hydrogeological Modeling |
| Fundamentals of Research | Mineralogy | Geohazards |
| Isotope Ecology | Paleontology/Historical Geology | Geochemistry |
| Geochemical Analytical Methods | Sedimentology/Stratigraphy | Historical Geology of Argentina |
| Environmental Data Analysis | Igneous/Metamorphic Petrology | Paleoclimatology |
| Distinguished Lecturer Series | Structural Geology | Geomorphology |
| Cenozoic Placental Mammals | Field Geology | Ice Age Earth |

**Research Experience**   
**Using Non-Destructive Raman Spectroscopy to Determine Fossil Diagenesis, Masters Thesis; 2016-2018**Combined current methods of light isotope analysis with experimental Raman spectroscopy methods to create a non-destructive examination of fossil integrity prior to any destructive analysis. Presented work as a poster at the 2017 SVP meeting in Calgary, Canada and as a talk at the 2017 Bone Diagenesis meeting in Oxford, UK. **Mechanobiology of a Resilient Bone Extracellular Matrix: A Multiscale Perspective on How Bats Achieve Exceptional Mechanical Properties in Wing Bones, Research Assistant; 2016-2018**Lead the examination of specimens with Raman spectroscopy and on the Elemental Analyzer as a way to identify and measure organic and mineral components of the bone.

**Ichnology of the Jurassic Stump and Curtis Formations, Utah; 2015**

Described trace fossil assemblages at several localities to interpret paleoenvironmental setting and sequence stratigraphic context. Awarded $4,000 through Undergraduate Summer Scholars program to support research. Presented findings at 2015 GSA National Meeting in Baltimore, Maryland. Publication in progress.

**Museum Exhibit Design, “Ohio Undersea”; 2015**

­Designed interactive and educational exhibits for the new MU Geology Museum. Met weekly with the curator to create interesting designs that were appealing to the public while learning how to engage a diverse audience.

**Applying Alexander Technique to Horn Performance; 2015**

­Enhanced the understanding and applications of the Alexander Technique through body mapping and practice. Improved the understanding of body and performance mentality.

**Insect Herbivory Analysis of PETM Plant Fossils; 2013-2014**

­Analyzed fossil leaf specimens to quantify percent surface area damaged to analyze changes in pCO2 following the Paleocene/Eocene Thermal Maximum. Presented a poster at the Miami Undergraduate Research Forum and am a co-author with Ellen Currano on a manuscript published in Ecology and Evolution.

**Hydrocarbon Exploration of the Appalachian Basin; 2013-2014**

­Digitized well logs to map the Marcellus Shale formation. Worked along with 12 other students in collaboration with Wrightstone Energy Consulting. Presented posters at the Miami Undergraduate Research Forum.

**Publications**

Currano, E. D., Laker, R., Flynn, A. G., Fogt, K. K., Stradtman, H. and Wing, S. L. (2016), Consequences of elevated temperature and *p*CO2 on insect folivory at the ecosystem level: perspectives from the fossil record. Ecol Evol, 6: 4318–4331. doi:10.1002/ece3.2203

**Meeting Abstracts/Presentations**

Laker, R.A., and Clementz, M.T., 2017, Using Non-Destructive Raman Spectroscopy to Investigate Young Fossil Diagenesis, 8th Bone Diagenesis Conference, Oxford, UK.

Clementz, M.T., and Laker R.A., 2017, Assessing Preservation of Tympanic Bullae of Fossil and Modern Cetacea Using Raman Spectoscopy (1064 nm), 8th Bone Diagenesis Conference, Oxford, UK.

Laker, R.A., and Clementz, M., 2017, Using Raman Spectroscopy as a Tool to Investigate Sub-Fossil and Young Fossil Diagenesis, Society of Vertebrate Paleontology Meeting Program and Abstracts, v. 6, no. B46 (105).

Laker, R.A., and Currie, B.S., 2015, Ichnology of the Upper Jurassic Curtis and Stump formations, central and northeastern Utah: Relationships between paleoenvironmental setting and sequence stratigraphic position, Geological Society of America Annual Meeting Abstracts with Programs, v. 45, no. 7.

Stradtman, H.E., and Laker, R.A., 2014, Consequences of elevated temperature and pCO2 on insect folivory at the ecosystem level: Perspectives from the fossil record. Miami University Undergraduate Research Forum, C18, p 26.

Thrailkill, A.M., Adams, E., Vogt, S.G., Morris, C.M., Kelly, S.R., Skaggs, J.D., Colliver, L.A., Lee, M.K., Laker, R.M., Pratschler, M.E., Lee, D.A., Scott, D.H., and Currie, B.S., 2014, Stratigraphic architecture of the Upper Devonian Burket Shale in the northern Appalachian Basin of Pennsylvania, West Virginia, and Ohio. Miami University Undergraduate Research Forum, C03, p. 25.

**Volunteer/Professional Activities**

**Coordinator for Graduate Student Practice Talk Session and Spring Seminar; 2017**Designed an afternoon of mock-talks to allow the graduate student community to prepare for upcoming conferences. Initiated the event by giving my own talk. Organized weekly spring talk sessions funded by ConocoPhillips.

**Fossil Preparation Course; 2016-2018**Met monthly with Heather Finlayson to discuss and practice various fossil prep techniques from field to collections, such as creating and removing casts, working with different matrixes, and using various adhesives.

**Geology Museum Outreach Volunteer; 2016-2018**Regular volunteer for events hosted or attended by the University of Wyoming Geology Museum, including the Eclipse/Solstice Festival, Wyoming Rocks!, the Fossil Fish Festival, and Earth Day. Worked hands-on with children to explore science, including teaching them to prep specimens, identify minerals, and conduct their own experiments.

**Teaching Experience; 2016-2018**

Led labs in both Paleontology and Global Sustainability by teaching hands on experiences and gathering lab specimens. Taught lecture for Paleontology as needed by the professor. Designed exams according to student experiences in both lab and lecture.

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| **Graduate:** | **Undergraduate:** |
| NSF Predoctroal Fellowship Applicant (2017)  (awards to be presented in April 2018) W.E. Andrau Scholarship (2017) Marie Morisawa Memorial Scholarship (2017) Geology Summer Field Support (2017) John R. Hanley Scholarship (2017) John R. Hanley Scholarship (2016)  Klaenhammer Excellence Fund (2016) UW Symphony Orchestra (2016) | Donna Clare Sheley Scholarship (2015-2016)  ­Pamela Eileen Poccia Award (2015-2016)  ­David Morrow Field Geology Award (2015)  ­Winter Term Grant (2013-2016)  ­Redhawk Excellence Scholarship (2012-2016)  ­Undergraduate Summer Scholar Award (2014-2015)  ­Radabaugh Geology Scholarship (2013-2014)  ­Steuk Music Award (2013-2014)  ­Carl E. Limper Scholarship for Outstanding Geology Academic Performance (2012-2013)  ­Julie B Coleman Scholarship (2012-2013)  President’s List and Dean’s List |

**Awards and Honors**