Andrew Morris, PhD

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EDUCATION

PhD Biology, (2022) *University of Oregon* — Eugene, OR

MS Soil Science, (2017) *The Pennsylvania State University* — State College, PA

BS Plant Sciences, (2014) *Cornell University* — Ithaca, NY

SKILLS

Languages and Tools: R, Bash, Git, Python, GNU Make

Selected Coursework:

- *Machine Learning for Image Analysis* - Introduction to Deep Neural Networks using Keras and Tensorflow
- *Advanced Biological Statistics I & II* - Core concepts and methods in frequentist and Bayesian analysis using R and Stan
- *Strategies and Techniques for Analyzing Microbial Community Population Structures* - Heterogeneous data structures, exploratory statistics, and visualization

EXPERIENCE

University of Oregon — Aug 2017-Present)

Post-doctoral Scholar (Mar 2022-Present — Eugene, OR, USA

NSF Graduate Research Fellow (Aug 2017-Mar 2022)

- Developed the ability to think critically, work independently, and formulate research questions
- Maintained data pipelines using GNU make, git, and slurm in a HPC cloud computing environment
- Generated insights from large, heterogeneous data sets using machine learning, multivariate statistics, and mixed models
- Published multiple scientific papers in peer-reviewed journals
- Mentored early career scientists in data analysis with R as well as written and oral communication
- Authored and co-authored funded grant proposals from local and national institutions including a $3 million (USD) award
- Presented research results to diverse audiences including the general public, industry partners, and scientific specialists

The Pennsylvania State University — Aug 2015-July 2017

Graduate Research Assistant — State College, PA, USA

- Conducted industry-partnered experiments with interdisciplinary research teams
- Delivered data analysis results that guided on-farm practices to balance profitability with environmental impacts using sustainable agriculture
- Presented research to farmers, industry partners, and scientists at farmer advisory board meetings, on-farm field days, and scientific meetings

University of Delaware — Feb 2015-Jul 2015

Research Assistant — Newark, DE, USA

- Supervised construction and data collection for a field experiment with graduate and undergraduate research assistants
- Managed daily lab work, handled procurement, and contributed to a scientific publication

PROJECT PORTFOLIO

Prediction of greenhouse gas emissions from soil microbiome composition — July 2023

- Conducted an artificial selection experiment to identify microbial communities that perform methane consumption. Estimated microbial community performance using regression and beta-binomial models.

Applying genotype-phenotype mapping to microbial ecosystem functions — March 2020

- Demonstrated the use of agnostic search and controlling for data stratification to identify microorganisms associated with important ecosystem functions such as greenhouse gas emissions.

Selected Publications

1. **Morris AH**, Isbell SA, Saha D, and Kaye JP. 2021. Mitigating nitrogen pollution with undersown legume-grass cover crop mixtures in winter cereals. J. Environ. Qual. doi: 10.1002/jeq2.20193
2. **Morris AH**, Meyer KM, Bohannan BJM. 2020. Linking microbial communities to ecosystem functions: what we can learn from genotype-phenotype mapping in organisms. Philos. Trans. Royal Soc. B doi: 10.1098/rstb.2019.0244