Andrew Morris

NSF Research Fellow

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Summary

Biologist and data scientist asking and answering fundamental biological questions. I take a tool-agnostic approach leveraging machine learning and statistics to make discoveries from deep marker gene and metagenomic sequencing data. I am passionate about communication and reproducible research and demonstrate this with a track record of published peer-reviewed articles and funded grant proposals as well as maintaining code and data in public repositories. I have collaborated with research teams of three to fourteen members made up of diverse stakeholders and led multi-year research efforts. Finally, I prioritize Deep Work for focused productivity.

Education

In progress **PhD Biology**, *University of Oregon*, Eugene, OR.

2017 **MS Soil Science**, *Penn State University*, State College, PA.

2014 **BS Plant Sciences**, *Cornell University*, Ithaca, NY.

Experience

2017–present **NSF Graduate Research Fellow**, *University of Oregon*, Eugene, OR.

- Used artificial selection and metagenome-wide association tests to identify members of the soil microbiome that reduce greenhouse gas emissions.
- Synthesized knowledge from diverse fields of ecology and evolution to bring a new perspective to microbiome science.
- Awarded multiple grants and fellowships to fund my research including the prestigious National Science Foundation Graduate Research Fellowship.
- Authored six peer-reviewed scientific papers including one published in *Philosophical Transactions of the Royal Society*, the oldest English-language scientific journal.

2015–2017 **Graduate Research Assistant**, *Penn State University*, State College, PA.

- Performed independent research on soil microorganisms that demonstrated new ways of reducing the impact of agriculture on climate change.
- Conducted research with a collaborative team of over 14 people including scientists, technicians, extension educators, and farmers.
- Communicated technical concepts to diverse audiences ranging from field-based teaching in glacial ecosystems in Alaska and Peru to farmer field days in central Pennsylvania.

2015 **Research Assistant**, *University of Delaware*, Newark, DE.

- Designed and built experimental rice paddies to study the effects of arsenic on rice, which is a major global health challenge.
- Developed an affordable strategy to reduce arsenic contamination in rice by amending soils with freely available rice husk ash - research that has been cited over 60 times.
- Led an educational field day for middle school students of color who had never been on a farm. The students learned where their food comes from and grew their own rice plants.

Skills

Formal Training.

- Advanced biostatistics coursework with both frequentist and Bayesian inference using `R` and `Stan`.
- Training in bioinformatics at the Marine Biology Laboratory in Woods Hole, MA using `R`, `Python`, and QIIME 2 to analyze deep marker gene and metagenomic data.
- Intensive workshop in machine learning for image analysis using deep neural networks with `Keras` and `TensorFlow` through the University of Oregon Data Science Initiative.

Typesetting	LaTeX, `R Markdown`, `Jupyter`	Coding	`R`, `Stan`, `Python`
Computing	HPC, Slurm, Unix	Collaboration	`git`, Github, Slack, Zoom

Awards

2017-2021 **University of Oregon**, *Graduate School*.

- NSF Graduate Research Fellowship Award
- Oregon ARCS Foundation Scholar
- Elma Hendricks Scholarship
- William R. Sistrom Memorial Scholarship

2015-2017 **Penn State University**, *Graduate School*.

- Distinguished Master's Thesis Award
- Annie's Sustainable Agriculture Scholarship
- Scarlet Graduate Fellowship in Watershed Stewardship Award
- Katherine Mabis McKenna Fellowship Award

2010-2014 **Cornell University and Ithaca College**, *Undergraduate*.

- Hatch/Multistate Grant
- Flora Brown Award

Selected Publications

2021 **Morris, AH**, Isbell, SA, Saha, D and Kaye, JP. Mitigating nitrogen pollution with undersown legume-grass cover crop mixtures in winter cereals. *Journal of Environmental Quality*, Accepted Author Manuscript. https://doi.org/10.1002/jeq2.20193

2020 **Morris, AH**, Meyer, KM, and Bohannan, BJM. Linking microbial communities to ecosystem functions: what we can learn from genotype–phenotype mapping in organisms. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375(1798), 20190244. https://doi.org/10.1098/rstb.2019.0244

2016 Seyfferth, AL, **Morris, AH**, Gill, R, Kearns, KA, Mann, JN, Paukett, M, and Leskanic, C. Soil Incorporation of Silica-Rich Rice Husk Decreases Inorganic Arsenic in Rice Grain. *Journal of Agricultural and Food Chemistry*, 64(19), 3760-3766. https://doi.org/10.1021/acs.jafc.6b01201