Erica Holdridge, Ph.D.
Computational Biologist
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PROFESSIONAL SUMMARY

- **Strong quantitative skills in complex system modeling, including statistical, numerical, analytical, and simulation models**
- **Independently develop and employ bioinformatics pipelines for genomic and metagenomic datasets using HPC and cloud computing**
- **Enthusiasm for collaboration and communicating scientific research to a wide variety of audiences**
- **Hands-on experience with all steps of NGS (Illumina and Oxford Nanopore Technologies MinION) process from sample collection to data analysis**

EDUCATION

Ph.D. in Ecology & Evolutionary Biology, Yale University 05/2021
M.S. in Biology, California State University, Northridge 05/2015
B.S. in Biological Science with Honors, Florida State University 05/2013

TECHNICAL SKILLS

Coding: R (10 yrs.), Linux/Unix (9 yrs.), Python (9 yrs.), git (3 yrs.), Docker (1 yr.), WDL/Cromwell (1 yr.)
Computing: HPC (Slurm/LSF/PBS; 7 yrs.), parallel computing (7 yrs.)
Quantitative: statistics (frequentists, multivariate, Bayesian), data visualization
Laboratory: NGS (Illumina 9 yrs.; Nanopore 2 yrs.), microbial culturing (9 yrs.)
Project management & collaboration: Slack (5 yrs.), Zoom & Teams (3 yrs.)

RESEARCH EXPERIENCE

Computational Biologisy II, Dana-Farber Cancer Institute 01/2023 – Present
Supervisor: Dr. Guruprasad Ananda

Assistant Professor of Bioinformatics and Biology, Stonehill College 09/2022 – 01/2023
Supervisor: Dr. Bronwyn Heather Bleakley

- Manage start-up and grant funds to conduct novel research on viruses and their hosts in complex microbial communities.
- Write, edit, and submit manuscripts and grant applications.
- Present research in scientific talks at regional, national, and international conferences.
- Develop and disseminate educational materials for courses in Bioinformatics, Applied Bioinformatics and Biological Statistics.
- Measure and evaluate student performance and use this information to create plans for growth and success.
- Oversee and advise student research projects and theses.

Postdoctoral Research Fellow, Boise State University Biological Sciences 01/2021 – 09/2022
Supervisor: Dr. Leonora Bittleston

- Independently proposed and received $207,000 in federal funding to identify and characterize viruses in complex microbial communities.
- Built a custom bioinformatics pipeline using Python and command line tools (FastQC, BWA, SAMtools, Prodigal, etc.) to discover and characterize viruses in metagenomic datasets.

- Performed genomic DNA and total RNA extractions, library prep, and Illumina NSG with environmental and laboratory microbial communities.
- Wrote, edited, and submitted manuscripts communicating project findings.
- Presented research in scientific talks at national and international conferences.
- Collaborated with groups at BSU, College of Western Idaho, and the Idaho STEM Action Center to create and lead research training programs for students and K-12 teachers.

Graduate Researcher, Yale University Ecology & Evolutionary Biology 08/2015 – 12/2020
Research advisor: Dr. David Vasseur
- Collaboratively developed novel theoretical models in Mathematica to understand how individual trait variation promotes coexistence in complex ecological communities.
- Increased model efficiency on HPCs using parallel computing and Slurm computing scripts.
- Wrote, edited, and submitted manuscripts communicating project findings.
- Presented research in scientific talks at national and international conferences and in talks for the public at local libraries.

Graduate Researcher, California State University, Northridge Biology 08/2013 – 07/2015
Research advisor: Casey terHorst
- Implemented an Illumina 16S workflow and bioinformatics pipeline using QIIME and custom Python scripts to understand how bacterial diversity changes under different nutrient and grazing regimes.
- Used multivariate statistics, maximum likelihood models, and structural equation modeling in R to understand how nutrient enrichment affects microbes in laboratory microcosms.
- Lead weekly R coding workshops to help other graduate students and professors build their R programming skills.
- Wrote, edited, and submitted manuscripts communicating project findings.
- Presented research in scientific talks at national and international conferences.

LEADERSHIP EXPERIENCE

Vertically Integrated Project Co-Instructor, BSU/College of Wester Idaho 01/2022 – 05/2022
- Taught research skills such as R programming, microbial culturing, NCBI BLAST, and scientific communication to 11 undergraduate students.
- Collaboratively created training materials for data analysis in R, using NBCI's BLAST to assign taxonomy to microbial sequence data, and data visualization in R.

i-STEM Instructor, Idaho STEM Action Center 01/2021 – 07/2022
- Developed and lead a classroom of 10-20 K-12 teachers through a week-long course to help build STEM content knowledge and pedagogical skills.
- Managed a budget of $200/participant to provided teachers with all the materials and skills they need to teach their students about virus biology and how viruses interact with humans and the environment.

Summer Authentic Research Experience Mentor, BSU 05/2022-08/2022
- Provided one-on-one mentorship for an undergraduate student who conducted a research project comparing two bioinformatics tools that identify viruses in metagenomic dataset.
- Taught Linux programming, bash scripting, and how to analyze and visualize data in R.
- Prepared mentee to present research findings in a scientific poster and talk at the Idaho Conference for Undergraduate Research 2021.

Teaching Fellow, Yale University 08/2015 – 12/2020

- Assisted with developing and disseminating course materials for undergraduate courses related to ecology and evolutionary biology.
- Managed a classroom of 20-30 students at a time.

McDougal Writing Fellow, Yale University 08/2017 – 05/2018
- Developed and disseminated 80 workshops per year attended by over 1000 graduate students and postdocs as part of a team of a 40 fellows and directors.
- Independently conducted workshops on scientific writing and communication, including how to visualize data for publication in scientific reports and journals.

HONORS AND AWARDS

NSF Postdoctoral Research Fellowship in Biology	2020
Jane M. Oppenheimer Fellowship	2020
Charles A. and June R.P. Ross Fellowship	2017
Mack I. Johnson Research Award for Outstanding Graduate Student	2015
Bianchi Outstanding Graduate Research Award	2015
Julie Gorchynski, M.D. Graduating Masters Student Award	2015
Leslie and Terry Cutler Scholarship for Outstanding Promise in Science	2014
Graduate Fellowship for Outstanding Research Promise in Science and Mathematics	2014

PEER-REVIEWED PUBLICATIONS

Holdridge, E.M., M. Emmen and L.S. Bittleston. Bacteriophage play a role in the degradation of pitcher plant insect prey. Submitted.

Holdridge, E.M. and D.A. Vasseur. Intraspecific variation promotes coexistence under competition for essential resources. *Theoretical Ecology.* DOI: 10.1007/s12080-022-00539-9. July 2022.

Rodriguez, Z., **E.M. Holdridge**, and T.E. Miller. Cryptic coloration in the green lynx spider (*Peucetia viridans). Ecological Entomology.* DOI: 10.1111/een.13132. February 2022.

Holdridge, E.M., G.E. Flores and C.P. terHorst. Predator trait evolution alters prey community composition. *Ecosphere.* DOI: 10.1002/ecs2.1803. May 2017.

Holdridge, E.M., C. Cuellar-Gempeler and C.P. terHorst. A shift from exploitation to interference competition with increasing density affects population and community dynamics. *Ecology and Evolution.* DOI: 10.1002/ece3.2284. August 2016.

PROFESSIONAL PRESENTATIONS

5 invited seminar and keynote presentations at major universities, schools, and regional conferences from 2014 – 2020 (UCLA, National Association of Pediatric Nurse Practitioners CT Chapter, Darien High School Science Symposium, Florida State University, University of Illinois/Indiana University/University of Chicago/UNC Greensboro)

11 national and international conference presentations from 2013 – 2022 including *Ecological Society of America* and *American Society for Microbiology* conferences

PROFESSIONAL AFFILIATIONS AND OTHER TRAINING

American Society for Microbiology, member	2022 – present
NSF EPSCoR Postdoc Integration Team, member	2021 – 2022
Yale Journal of Biology and Medicine, manuscript editor	2015 – 2017

Ecological Society of America, member 2014 – present
Enhancing Linkages between Mathematics and Ecology, participant 06/2014