Marc A. Beer

Personal Website

EDUCATION

Washington State University Pullman, WA
Doctor of Philosophy in Biology, focus in genomics & landscape ecology, GPA: 4.00/4.00 2019 - Present

- National Science Foundation Graduate Research Fellowship (NSF GRFP) (2020 - Present)
- Washington State University Distinguished Scholar (2020 - Present)
- Philip H. Abelson Graduate Fellowship (2019 - 2021)

University of Iowa Iowa City, IA
Bachelor of Science in Biology, Minor in Environmental Science, GPA: 4.19/4.00 2015 - 2019

- *Summa cum laude*, Honors in Major, University Honors, Phi Beta Kappa, President's List (2016-2019), Dean's List (2015-2019)
- University of Iowa Tuition Scholarship (2016-2019), Old Gold Scholarship (2015-2019), National Scholars Award (2015-2019), Bill and John Fenton Scholarship (2018), Lowden Prize in Biology (2018), Rhodes Dunlap Second and Third Year Awards (2017-2018), Classics Departmental Latin Award (2017), Myrna Lee Sprengeler Memorial Scholarhsip (2017), Ralph K. and Maxine J. Hibbs Scholarship (2016)

RESEARCH EXPERIENCE

School of Biological Sciences, Washington State University Pullman, WA
Graduate Research Fellow Aug. 2019 - Present

- Used redundancy analysis to identify environmental correlates of multiple-response genetic data in relation to Tasmanian spotted-tailed quoll populations. Research published in *Nature Ecology and Evolution*.
- Used dimensionality reduction approaches, including principal components analysis, to characterize genetic relationships among invasive cane toad populations in Australia. Manuscript submitted to *Molecular Ecology*.
- Implemented regression analyses including latent factor mixed models to explore environmental correlates of genetic variation among populations of a near-threatened salamander. Research published in *Evolutionary Applications*.
- Used GIS and associated tools such as SQL to integrate geographic data from multiple sources.
- Developed a genetic algorithm to optimize hyperparameters for an existing Markov Chain Monte Carlo based population genetics analysis.
- Used R data visualization techniques alongside Adobe Creative Suite to regularly present scientific findings to an international, interdisciplinary research group.
- Maintained scripts and code associated with data analysis on GitHub to ensure project reproducibility.

Department of Biology, University of Iowa Iowa City, IA
Undergraduate Research Assistant Feb. 2017 - May 2019

- Used principal components analysis and ANOVA to characterize morphological differences among closely related agricultural pest species. Manuscript submitted to *Evolutionary Ecology*.
- Assisted generation of genetic data to resolve relationships among agricultural pest species, leading to publication in *Journal of Evolutionary Biology*.
- Employed regression analysis to characterize thermodynamic properties of agricultural pest species using time series data.
- Created and presented PowerPoint presentation of research to supervisors in the Department of Biology.

Marc A. Beer

TEACHING EXPERIENCE

School of Biological Sciences, Washington State University Pullman, WA
Grader Aug. - Dec. 2021, 2022

- Contributed guest lectures to BIOL 395: Evolutionary Medicine.
- Graded exams.

School of Biological Sciences, Washington State University Pullman, WA
Graduate Student Instructor Aug. 2019 - May 2020

- Led two laboratory sections each of BIOL 102: General Biology and BIOL 372: General Ecology
- Supervised laboratory and field experiments, evaluated weekly student reports, and graded exams.

PEER-REVIEWED PUBLICATIONS

Beer MA, Proft KM, Veillet A, Kozakiewicz CP, Hamilton DG, Hamede R, McCallum H, Hohenlohe PA, Burridge CP, Margres MJ, Jones ME, Storfer A. 2024. Disease-driven top predator decline affects mesopredator population genomic structure. In press, *Nature Ecology and Evolution*.

Beer MA, Kane RA, Micheletti SJ, Kozakiewicz CP, Storfer A. (2022). Landscape genomics of the streamside salamander: Implications for species management in the face of environmental change. *Evolutionary Applications* 15(2): 220 - 236. Link.

Hippee AC, **Beer MA**, Bagley RK, Condon MA, Kitchen A, Lisowski EA, Norrbom AL, Forbes AA. (2021). Host shifting and host sharing in a genus of specialist flies diversifying alongside their sunflower hosts. *Journal of Evolutionary Biology* 34(2): 364 – 379. Link.

Piscopo A, Seaman SC, **Beer MA**, Torner JC, Greenlee JDW. (2021). A meta-analysis of proportions of single arm observational series for anterior skull base meningiomas comparing supraorbital craniotomy to the endoscopic endonasal approach. *Interdisciplinary Neurosurgery* 26: 101303. Link.

Forbes AA, Bagley RK, **Beer MA**, Hippee AC, Widmayer HA. (2018). Quantifying the unquantifiable: why Hymenoptera - not Coleoptera - is the most speciose animal order. *BMC Ecology* 18:21. Link.

SUBMITTED PUBLICATIONS

Beer MA, Trumbo DR, Rautsaw RM, Kozakiewicz CP, Epstein B, Hohenlohe PA, Alford RA, Schwarzkopf L, Storfer A. Selection and gene flow interact to produce spatial variation in genomic signatures of local adaptation during the cane toad invasion of Australia. Submitted, *Molecular Ecology*.

Gallinson DG, Kozakiewicz CP, Rautsaw RM, **Beer MA**, Ruiz-Aravena M, Comte S, Hamilton DG, Kerlin DH, McCallum H, Hamede R, Jones ME, Storfer A, McMinds R, Margres MJ. Intergenomic signatures of coevolution between Tasmanian devils and an infectious cancer. Submitted, *Proceedings of the National Academy of Sciences*.

Hippee AC, **Beer MA**, Norrbom AL, Forbes AA. Stronger sexual dimorphism in fruit flies may be favored when congeners are present and females actively search for mates. Submitted, *Evolutionary Ecology*. Link.

Kane RA, **Beer MA**, Kozakiewicz CP, Patton AH, Fraik AK, Hohenlohe PA, Margres MJ, Jones ME, Hamede R, McCallum H, Storfer A. Genetic diversity of the Tasmanian devil pre- and post-disease emergence: Implications for genetic rescue. Submitted, *Scientific Reports*.

OTHER PUBLICATIONS (NOT PEER-REVIEWED)

Beer MA, Storfer A. 2024. Research Briefing: Disease-driven decline in a top predator affects evolution of a competing mesopredator. In press, *Nature Ecology and Evolution*.

Storfer A, Kozakiewicz CP, **Beer MA**, Savage AE. (2020). Applications of population genomics for understanding and mitigating wildlife disease. In Population Genomics: Wildlife (P Hohenlohe and OP Rajora, eds.).

FUNDING ACQUIRED — TOTAL: $148,500.00

National Science Foundation Graduate Research Fellowship (2020 - Present)	$138,000.00
Philip H. Abelson Graduate Fellowship (2019 - 2021)	$8,000.00
Iowa Center for Research by Undergraduates Summer Fellowship (2017)	$2,500.00

PRESENTATIONS

* Presenting researcher

***Beer MA**. 2023. Understanding the impacts of abiotic and biotic factors on population genomic variation. School of Biological Sciences BioLunch Seminar. Washington State University. Pullman, WA.

***Beer MA**. 2023. Disease-driven top predator decline affects genetic variation among populations of a mesopredator. School of Biological Sciences Graduate Research Symposium. Washington State University. Pullman, WA.

***Beer MA**. 2022. The immune system. Guest lecture, BIOL 395: Evolutionary Medicine. Washington State University. Pullman, WA.

*Hippee AC, **Beer MA**, Bagley RK, Condon MA, Lisowski EA, Norrbom AL, and Forbes AA. 2020. The phylogeny of genus Strauzia (Diptera: Tephritidae) reveals histories of host shifting, including repeated shifts onto the same plant hosts. Plant and Animal Genome Conference. San Diego, CA.

*Hippee AC, **Beer MA**, Bagley RK, Condon MA, Lisowski EA, Norrbom AL, and Forbes AA. 2019. The phylogeny of genus Strauzia (Diptera: Tephritidae) reveals histories of host shifting, including repeated shifts onto the same plant hosts. Evolution 2019. Providence, RI.

***Beer MA**, Hippee AC, Forbes AA. 2019. Evolution of sexual traits in congeneric insects sharing a host plant. Biology Honors Colloquium. University of Iowa, Iowa City, IA.

*Hippee AC, **Beer MA**, Bagley RK, and Forbes AA. 2019. The phylogeny of genus Strauzia (Diptera: Tephritidae) reveals histories of host shifting, including repeated shifts onto the same plant hosts. DSHB Symposium on Biological Sciences. Davenport, IA.

***Beer MA**, Hippee AC, Forbes AA. 2018. Adaptive consequences of color variation among recently diverged varieties of a specialist insect. Iowa Center for Research by Undergraduates 14th Annual Spring Undergraduate Research Festival. University of Iowa, Iowa City, IA.

*Hippee AC, **Beer MA**, and Forbes AA. 2017. Evolution of adaptive coloration among recently diverged varieties of a specialist insect. DSHB Symposium on Biological Sciences. Davenport, IA.

Marc A. Beer

PROFESSIONAL SERVICE AND OUTREACH

***Ad hoc* reviewer** 2021 - Present

- Peer-reviewed submissions to *Molecular Ecology*, *Evolutionary Applications*, and *Conservation Genetics*

WSU SBS graduate student orientation 2021

- Mentored new students in a discussion panel entitled ”SBS Graduate Program: Student Perspectives”

Biology Graduate Student Association Family Fun Week 2020

- Designed an ecology-centered activity for children ages 12+; contributed two online video lessons

Invited research talk, WSU Undergraduate Research Club 2020

- Presented doctoral research to promote interest in science

Palouse Discovery Science Center 2019 - 2020

- Designed and led scientific enrichment activities for children ages 3-13yrs

University of Iowa Biological Interests Organization volunteer 2015 - 2019

- Organized biology-related activities for undergraduates.