Benjamin P. Gregory

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Education

University of Maryland **Expected May 2027**

- Ph.D. Candidate; Entomology
- College of Computer, Mathematical, and Natural Sciences
- Working Thesis Title: Thermal adaptation and hybridization in *Culex* mosquitoes: Implications for urban West Nile virus transmission

Vassar College **Graduated May 2020**

- Bachelor of Arts; Biology Major, Anthropology Minor
- Graduating GPA: 3.73/4.00 – Departmental and Institutional Honors
- Honors Thesis Title: Low-frequency background noise limits the influence of the audience effect on male *Dendropsophus ebraccatus* calling behavior

Research Experience

Graduate Researcher, University of Maryland, College Park — 2022-Present
Department of Entomology
Advisor: Megan Fritz

UMCES Faculty Research Assistant in Environmental Genomics — 2020-2022
Vassar College Ecological Preserve Land Steward and Research Assistant — Summer 2018
Vassar College Evolutionary Ecology Research Assistant — 2018-2020
Vassar College Undergraduate Research Summer Institute (URSI) Fellow — Summer 2019
SIT Panama: Tropical Ecology, Marine Ecosystems, and Biodiversity Conservation — Spring 2019

Technical Skills

Programming & computing: R (advanced; 8+ years), bash/shell scripting, Linux and HPC clusters, Python (working)
Population & landscape genomics: whole-genome Pool-seq analysis, genotype–environment association (BayPass), f3 admixture statistics, FST decomposition and ancestry inference, read-depth copy-number inference, structural-variant and inversion detection (DELLY)
Statistical modeling: negative-binomial GLMMs and mixed models, AIC-based model selection and likelihood-ratio testing, Gradient Forest compositional-turnover analysis
Geospatial & climate data: landscape-predictor extraction (impervious surface, tree canopy, NDVI, elevation), PRISM climate data, accumulated degree-day modeling
Wet lab & field: mosquito colony rearing, thermal-tolerance assays, field collection, DNA extraction for Pool-seq

Teaching Experience

UMD Teaching Assistant for Principles of Genetics — 2026
UMD Teaching Assistant for Introduction to Entomology — 2025
UMD Teaching Assistant for Insects, Pathogens, and Public Health — 2023-2026
Vassar College Academic Intern for Intro Biology and Evolutionary Genetics — 2018-2020

Mentoring Experience

Mentor for UMD Student Research in the Fritz Lab — Summer 2023-Present
Undergraduate Team Science Research Project Mentor — Spring 2025, 2026
Summer Opportunities in Agricultural and the Environment (SOARE) Program Mentor — Summer 2024
Northeast Regional Vector-Borne Disease Teaching & Evaluation Center Mentor — Summer 2024

Publications

Gregory, B. P., Aronson, H., Vinauger, C., Lahondère, C., & Fritz, M. L. (2026). **Stage-specific divergence in larval thermal tolerance among populations of the *Culex pipiens* Assemblage.** *Journal of Medical Entomology*, *63*(4), tjag115. https://doi.org/10.1093/jme/tjag115

Fuchsman, C. A., Duffy, M. E., Cram, J. A., Huanca-Valenzuela, P., Gregory, B. P., Plough, L. V., Pierson, J. J., Fitzgerald, C. L., Devol, A. H., & Keil, R. G. (2025). **Contributions of Vertically Migrating Metazoans to Sinking and Suspended Particulate Matter Fuel N_2 Production in the Eastern Tropical North Pacific Oxygen Deficient Zone.** *Global Biogeochemical Cycles*, *39*(3), e2024GB008365. https://doi.org/10.1029/2024GB008365

Huang, C. S., Legett, H. D., Plough, L. V., Aguilar, R., Fitzgerald, C., Gregory, B., Heggie, K., Lee, B., Richie, K. D., Harbold, W., & Ogburn, M. B. (2023). **Early detection and recovery of river herring spawning habitat use in response to a mainstem dam removal.** *PLOS ONE*, *18*(5), e0284561. https://doi.org/10.1371/journal.pone.0284561

Manuscripts in Preparation and Under Review

Gregory, B. P., & Fritz, M. L. (in prep). **Adaptive introgression along temperature and urbanization gradients in a metropolitan *Culex pipiens* hybrid zone.** *In preparation for Molecular Biology and Evolution.*

Gregory, B. P.*, Arsenault-Benoit, A.*, Irwin, P., Price, K. J., Witmier, B. J., Fitzpatrick, M. C., & Fritz, M. L. (submitted). **Climate and urbanization structure West Nile virus vector communities: Tools for surveillance under environmental change.** *Ecological Applications*. (*Co-first authors.)

Oral Presentations

Gregory B, Arsenault-Benoit A, Irwin P, Price K, Witmier B, Fitzpatrick M, Fritz M (April 2026) **Landscape features and phenology differentially influence *Culex pipiens* and *Culex restuans* abundance in Eastern North America.** Research talk presented at the Midwest Center for Excellence in Vector-Borne Disease Meeting, remote.

Gregory B, Fritz M (March 2026) **Genomic evidence for climate-mediated introgression in a shifting hybrid zone.** Research in progress talk presented at the UMD Entomology Department colloquium series, College Park, MD.

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (January 2026) **Landscape features and phenology influence relative *Culex* abundance along urbanization gradients in Maryland.** Research talk presented at the Virginia Mosquito Control Association 2026 Annual Meeting, Virginia Beach, VA.

Gregory B (October 2025) **Natural Mosquito Control for Gardeners.** Extension talk presented at the 2025 Montgomery County Master Gardener Fall Conference, remote.

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (August 2025) **Landscape features and phenology influence relative *Culex* abundance along urbanization gradients in Maryland.** Research talk presented at the University of Maryland Entomology Department's annual departmental retreat, College Park, MD.

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (July 2025) **Landscape features and phenology influence relative *Culex* abundance along urbanization gradients in Maryland.** Research talk presented at the Mid-Atlantic Zoonotic and Vector-Borne Disease Inter-Agency Workgroup July 2025 meeting, remote.

Gregory B, Fritz M (March 2025) **Evidence of local adaptation to temperature in *Culex pipiens* Assemblage larvae.** Ten-minute research talk presented at the 2025 Entomological Society of America Eastern Branch meeting, Harrisburg, PA.

Gregory B, Fritz M (November 2024) **Evidence of local adaptation to temperature in *Culex pipiens* Assemblage larvae.** Research in progress talk presented at the UMD Entomology Department colloquium series, College Park, MD.

Gregory B, Fritz M (January 2024) **Turning up the heat: A comparison of larval thermal tolerance between *Culex pipiens* and *Culex quinquefasciatus*.** Research talk presented at the 2024 Mid-Atlantic Mosquito Control Association conference, Annapolis, MD.

Gregory B, Fritz M (November 2023) **Turning up the heat: A comparison of larval thermal tolerance between *Culex pipiens* and *Culex quinquefasciatus*.** Research in progress talk presented at the UMD Entomology Department colloquium series, College Park, MD.

Poster Presentations

Gregory B, Fritz M (May 2026) **Introgression of adaptive alleles in the *Culex pipiens-quinquefasciatus* hybrid zone.** Poster presented at the Entomology Society of Washington's Annual Student Poster Competition, Washington, DC. (Won third place in student competition).

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (January 2026) **Landscape features and phenology influence relative *Culex* abundance along urbanization gradients in Maryland.** Poster presented at the Virginia Mosquito Control Association 2026 Annual Meeting, Virginia Beach, VA. (Won third place in student competition).

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (November 2025) **Landscape features and phenology influence relative cryptic *Culex* abundance along urbanization gradient in Eastern North America.** Poster presented at the Entomological Society of America 2025 Annual Meeting, Portland, OR.

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (November 2025) **Landscape features and phenology influence relative cryptic *Culex* abundance along urbanization gradient in Eastern North America.** Poster presented at the AAAS CV Riley Memorial Lecture, Washington, DC.

Gregory B, Arsenault-Benoit A, Fitzpatrick M, Fritz M (August 2025) **Landscape features and phenology influence relative cryptic *Culex* abundance along urbanization gradient in Eastern North America.** Poster presented at the Ecological Society of America 2025 Annual Meeting, Baltimore, MD.

Penafiel I, Gregory B, Fritz M (March 2025) **Knocked out cold – Comparing larval tolerance of freezing temperatures between *Culex pipiens* and *Culex quinquefasciatus*.** Poster presented at the 2025 UMD AGNR Climate Adaptation and Mitigation Workshop, College Park, MD.

Gregory B, Fritz M (November 2023) **Turning up the heat: A comparison of larval thermal tolerance between *Culex pipiens* and *Culex quinquefasciatus*.** Poster presented at the 2023 Entomological Society of America National meeting, National Harbor, MD. (Won first prize in student competition).

Fellowships

Ann G. Wylie Dissertation Fellowship	2026
University of Maryland CMNS Dean's Fellowship Award	2022

Honors and Awards

Third Place in the ESW Student Poster Competition	2026
Third Place in the VMCA Student Poster Competition	2026
Charles Reichelderfer Memorial Mentorship Award	2025
2024-2025 Teaching Achievement Award	2025
First Place in the ESA-MUVE National Student Poster Competition	2023
Virginia Swinburne Brownell Prize for Excellence in Biology	2020
Kate Roberts Prize for Excellence in Biology	2018