Matthew Bryan Hamilton
Curriculum Vitae
June, 2024

Georgetown University
Department of Biology
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Education

PhD, Ecology and Evolutionary Biology, Brown University (1995).
Dissertation title: "Ecological genetics and multilocus VNTR inferred populations structure of the coastal perennial Sea Lavender (*Limonium carolinianum*)"

BA, Biological Sciences, University of Chicago (1990).

Professional Experience

Associate Professor, Department of Biology, Georgetown University (2004-present).

Assistant Professor, Department of Biology, Georgetown University (1998-2004).

Postdoctoral Fellow and Research Associate, Smithsonian Institution, National Zoological Park, Molecular Genetics Laboratory, Washington, DC (1995-1998).

Certifications

U.S. Coast Guard Operator of Uninspected Passenger Vessels license (exp. Jan. 2026).

Publications

Books

Hamilton, M. B. 2021. *Population Genetics. 2nd Edition.* Wiley-Blackwell, Hoboken, NJ.

Refereed (in reverse chronological order)

Kottler E., **Hamilton M. B.,** and Gedan K. B. 2024. Phenotypic plasticity drives trait variation of a foundation marsh species migrating into coastal forest with sea-level rise. In press, Ecosphere.

Hurtado L. A., Mateos M., Caballero I. C., Oladimeji T. E., Adite A., Awodiran M. O., Winemiller K. O., and **Hamilton M. B**. 2024. Critically small contemporaneous effective population sizes estimated for stocks of the African bonytongue in Western Africa. Fishes 9(6):196. DOI: 10.3390/fishes9060196

Maguire B, Tomasula J, Rippel T, Wimp G, and **Hamilton M.B**. 2023. Sea level rise-induced habitat loss does not alter effective migration rate for the salt marsh insect *Tumidagena minuta* due to large genetic effective population size. Frontiers in Ecology and Evolution. DOI: 10.3389/fevo.2023.1160232

Wimp G. M., Tomasula J., and **Hamilton, M. B.** 2019. Putting the genes into community genetics. *Molecular Ecology* 28(19): 4351-4353. doi: 10.1111/mec.15209

Hamilton M. B., Tartakovsky M., and Battlocletti A. 2018. SpEED-Ne: software to simulate and estimate genetic effective population size (N_e) from linkage disequilibrium observed

in single samples. Molecular Ecology Resources 18(3): 714-728. See software at github.com/mbhamilton/SpEED-Ne

Gutiérrez-Ozuna R, and **Hamilton M.B.** 2017. Identification and characterization of microsatellite loci in the tuliptree, *Liriodendron tulipifera* (Magnoliaceae). Applications in Plant Sciences 5(8):1700032.

Braverman, J. M., **M. B. Hamilton**, B. A. Johnson. 2016. Patterns of substitution rate variation at many nuclear loci in two species trios in the Brassicaceae partitioned with ANOVA. Journal of Molecular Evolution 83(3):97–109.

Leviyang S. and **M. B. Hamilton**. 2011. Properties of Weir and Cockerham's F_{ST} estimators and associated bootstrap confidence intervals. Theoretical Population Biology 79:39-52.

Immler, S., **M. B. Hamilton**, Poslusny, N., Birkhead, T., and Epifanio, J. 2011. Postmating reproductive barriers in two unidirectionally hybridising sunfish (Centrarchidae: Lepomis). Journal of Evolutionary Biology 24(1):111–120.

Aggarwal, R.K., and 76 others. 2011. Permanent genetic resources added to Molecular Ecology resources database 1 August 2010 – September 2010. *Molecular Ecology Resources* 11: 219-222. (Isolation, characterization, and cross-species amplification of nuclear microsatellite loci in two salt marsh planthoppers, *Delphacodes detecta* and *Tumidagena minuta* (Homoptera: Delphacidae))

Soria-Hernanz D. F., Fiz-Palacios, O., Braverman, J. M., and **Hamilton M. B.** 2008. Reconsidering the generation time hypothesis based on nuclear ribosomal *ITS* sequence comparisons in annual and perennial angiosperms. BMC Evolutionary Biology 8:344.

Miller, J. R., Wood, B. and **Hamilton M. B.** 2008. F_{ST} and Q_{ST} under neutrality. Genetics 180:1023-1037.

Soria-Hernanz, D. F., Braverman, J. M., and **Hamilton M. B.** 2008. Parallel rate heterogeneity in chloroplast and mitochondrial genomes of Brazil nut trees (Lecythidaceae) is consistent with lineage effects. Molecular Biology and Evolution 25(7):1282-1296.

Rottenstreich, S., **M. B. Hamilton**, and J. R. Miller. 2007. Dynamics of F_{ST} for the island model. Theoretical Population Biology 72(4):485-503.

Rottenstreich S., J. R. Miller, and **M. B. Hamilton**. 2007. Steady state of homozygosity and G_{ST} for the island model. Theoretical Population Biology 72:231-244.

Drummond, C. D., and **M. B. Hamilton**. 2007. Hierarchical components of genetic variation at a species boundary: population structure in two sympatric varieties of *Lupinus microcarpus* (Leguminosae). Molecular Ecology 16:753-769.

Miller, J. R., M. C. Pugh, and **M. B. Hamilton**. 2006. A finite locus effect diffusion model for the evolution of a quantitative trait. Journal of Mathematical Biology 52(6): 761-787.

Drummond, C. D., and **M. B. Hamilton**. 2005. Isolation and characterization of nuclear microsatellite loci for *Lupinus* group *Microcarpi* (Leguminosae). Molecular Ecology Notes 5:510-513.

Brown K. M., G. Baltazar, and **M. B. Hamilton**. 2005. Reconciling nuclear microsatellite and mitochondrial marker estimates of population structure: breeding population structure of Chesapeake Bay striped bass (*Morone saxatilis*). Heredity 94:606-615.

Farzad, M., D. F. Soria-Hernanz, M. Altura, **M. B. Hamilton**, M. R. Weiss, and H. G. Elmendorf. 2005. Molecular evolution of the chalcone synthase gene family and identification of the expressed copy in flower petal tissue of *Viola cornuta*. Plant Science 168:1127-1134.

Adams, R. I, K. M. Brown and **M. B. Hamilton**. 2004. The impact of microsatellite electromorph size homoplasy on multilocus population structure estimates in a tropical tree (*Corythophora alta*) and an anadromous fish (*Morone saxatilis*). Molecular Ecology 13:2579-2588.

Hamilton, M. B., J. M. Braverman, and D. Soria-Hernanz. 2003. Patterns and relative rates of nucleotide and insertion/deletion evolution at six chloroplast intergenic regions in New World species of the Lecythidaceae. Molecular Biology and Evolution 20:1710-1721.

Lepsch-Cunha, N., C. A. Lund, and **M. B. Hamilton**. 2003. Isolation and characterization of nuclear microsatellite loci in the tropical arboreal palm *Oenocarpus bacaba* (Arecaceae). Molecular Ecology Notes 3:435-437.

Brown, K. M., G. A. Baltazar, B. N. Weinstein, and **M. B. Hamilton**. 2003. Isolation and characterization of nuclear microsatellite loci in the anadromous marine fish *Morone saxatilis*. Molecular Ecology Notes 3:414-416.

Hamilton, M. B., and J. R. Miller. 2002. Comparing relative rates of pollen and seed gene flow in the island model using nuclear and organelle measures of population structure. Genetics 162: 1897-1909.

Hamilton, M. B. 2002. Isolation and characterization of nuclear microsatellite loci in the tropical tree *Corythophora alta* (Lecythidaceae). Molecular Ecology Notes 2:363-365.

Hagedorn, M., S. L. Lance1, D. M. Fonseca, F. W. Kleinhans, D. Artimov, R. Fleischer, A. T. M. S. Hoque, **M. B. Hamilton**, and B. S. Pukazhenthil. 2002. Altering fish embryos with aquaporin-3: An essential step toward successful cryopreservation. Biology of Reproduction 67:961-966.

Hamilton, M. B. 1999a. Tropical tree gene flow and seed dispersal. Nature 401:129-130.

Hamilton, M. B. 1999b. Four primer pairs for the amplification of chloroplast intergenic regions with intraspecific variation. Molecular Ecology 8:521-523.

Dick, C., and **M. B. Hamilton**. 1999. Microsatellites from the Amazonian tree *Dinizia excelsa* (Fabaceae). Molecular Ecology 8:1765-1766.

Hamilton, M. B. and R. Fleischer. 1999. Cloned microsatellite repeats differ between 4-base restriction endonucleases. Journal of Heredity 90:561-563.

Hamilton, M. B., E. L. Pincus, A. DiFiore, and R. Fleischer. 1999. Universal linker and ligation procedures for construction of genomic DNA libraries enriched for microsatellites. BioTechniques 27:500-507.

Hamilton, M. B., 1997. Genetic fingerprint inferred population subdivision and spatial genetic tests for isolation by distance and adaptation in the coastal plant *Limonium carolinianum*. Evolution 51:1457-1468.

Hamilton, M. B., and D. M. Rand, 1996. Relatedness measured by oligonucleotide probe DNA fingerprints and an estimate of the mating system of Sea Lavender (*Limonium carolinianum*). Theoretical and Applied Genetics 93:249-256.

Hamilton, M. B., 1996. Review of *DNA Fingerprinting in Plants and Fungi*. 1994. Weising, K., H. Nybom, K. Wolff and W. Meyer, eds. CRC Press, Boca Raton, Florida. Plant Science Bulletin 42: 56-57.

Hamilton, M. B., 1994. *Ex situ* conservation of wild plant species: time to reassess the genetic assumptions and implications of seed banks. Conservation Biology 8:39-49.

Hamilton, M. B., and T. Mitchell-Olds, 1994. The mating system and relative performance of selfed and outcrossed progeny in *Arabis fecunda* (Brassicaceae). American Journal of Botany 81:1252-1256 (Cover article).

Manuscripts submitted or in preparation

Hamilton MB, Minsavage-Davis C, Kottler E, and Gedan KB. Clonality and genetic differentiation of the salt marsh plant Spartina patens. In preparation.

Hamilton MB. Estimating mating system and dispersal parameters in clonal plants using learning. In preparation.

Popular press

Hamilton, M. B., 2000. Darwin still stands: new books lack punch needed to knock out evolution. Georgetown University Blue & Gray 9(16): 3. Faculty opinion column reviewing two popular press books on "intelligent design."

Hamilton, M. B., 1996. In celebration of Sea Lavender. A salt marsh native enriches our knowledge of plant population biology. Rhode Island Wild Plant Society Newsletter 10(2):1-3.

Computational methodologies

http://evolutiongenetics.georgetown.edu/. Web-based evolutionary genetic simulation suite for student instruction and to accompany *Population Genetics*. This work was supported by a Georgetown University Initiative on Technology-Enhanced Learning (ITEL) grant.

Nuin, P. and Hamilton, M. B. 2009. PopGene.S^2 ("population genetics simulation software") (no longer supported). A "freeware" application for Windows containing simulations designed to help students learn fundamental concepts in population genetics.

Hamilton, M. B. 1991. "Response Surface Analysis" for the Macintosh (no longer supported). A "freeware" application to estimate quadratic response surfaces with jackknife significance tests. Useful for phenotypic selection analyses and complex fitness surface estimation.

Fellowships and Research Grants

Extramural Grants

Current

None.

Pending

None.

Past

National Science Foundation, DBI - BIO - Research Experiences for Undergraduates Sites (with co-PI Martha Weiss, Georgetown University, Dept. of Biology), "REU Site: Environmental science and policy in the nation's capital" March, 2016 – Feb., 2019. $362,636 (total costs), DBI 1559887.

Department of Defense (DOD) Gulf War Veterans Illness Research Program (GWVIRP) Supplement to the United States Army Medical Research and Materiel Command

(USAMRMC) Broad Agency Announcement 06-1 (BAA 06-1) (with PI James N. Baraniuk, M.D., Georgetown University, Dept. of Medicine) "CNDP1 Polymorphisms and Carnosine Therapy in GWI." Aug. 15, 2007 to Aug. 14, 2011. $931,200 (total costs). DoD Award GWI_W81XWH-07-1-0618

Department of the Army grant GW080053 (with PI James N. Baraniuk, M.D., Georgetown University, Dept. of Medicine) "Exercise-induced cerebrospinal fluid proteomic biomarkers of fatigue." $921,307 (total costs). August 1, 2009 to July 31, 2012 GW080053.

National Science Foundation, Division of Environmental Biology, Urban Long-Term Research Area Exploratory Awards (ULTRA-Ex) (co-investigator with PI Ali Whitmer, Georgetown University and co-PIs M. Galvin, P. Armbruster, S. Kaushal and J. M. Grove) "Urban sustainability and push-pull drivers of long term urban residential change: Washington, D.C., Baltimore, Maryland, and the Chesapeake Bay." Sept. 1, 2009 to Aug. 31, 2010, $258,400 (total costs), DEB 0948947.

Washington Biologists' Field Club, "Comparing alternative models of the genetic impacts of population bottlenecks using Chesapeake Bay striped bass (*Morone saxatilis*) as an example organism." 04/2008 to 03/2009, $2400.

National Science Foundation, Division of Mathematical Sciences, Applied Mathematics, (with PI Judith Miller, Georgetown University, Dept. of Mathematics), "Modeling evolution of quantitative traits with finite locus effects in structured populations." June, 2002 to December, 2008, $608,180, DMS-0201173.

Washington Biologists' Field Club, "Testing for genetic impacts of a severe population bottleneck in striped bass (*Morone saxatilis*) in the Chesapeake watershed." 03/2006 to 03/2007, $2350.

Research Experiences for Undergraduates (REU) supplement for National Science Foundation, Division of Environmental Biology, "The impacts of tropical forest fragmentation and population structure, seed and pollen gene flow and future genetic diversity in the tropical tree *Corythophora alta.*" Supplement period 06/2003 to 08/2003, $6,000 total ($5,500 direct, $500 indirect), DEB-9983014-SUPP.

National Science Foundation, Division of Environmental Biology, "CRB-The impacts of tropical forest fragmentation on population structure, seed and pollen gene flow, and future genetic diversity in the canopy tree *Corythophora alta*" (DEB-9983014, 36 months, $244,859). January, 2000 to December, 2003.

National Science Foundation (with co-PI's H. Elmendorf and J. Neale), "A genetic analyzer for DNA sequencing and DNA fragment analysis in the basic sciences at Georgetown University" (DBI-0100061, 24 months, $107,250 from NSF, $78,500 cost sharing). 09/2001 to 08/2003.

Washington Biologists' Field Club, "Estimating breeding population structure of striped bass (*Morone saxatilis*) in the Chesapeake watershed." 03/2001 to 03/2002, $1900.

Biological Dynamics of Forest Fragments Project management committee, "The effects of forest fragmentation on mating patterns and population structure in the canopy tree *Corythophora alta* (Lecythidaceae)" (annual requests for permission to conduct research and receive logistical support). 1996 through 2003.

Biological Dynamics of Forest Fragments Project (with J. Kress and R. Fleischer), "The effects of forest fragmentation on mating patterns and population structure in tropical plants". 1998, $3,000 for laboratory supplies.

National Geographic Society (with R. Fleischer and J. Kress), "Tropical forest fragmentation and future plant genetic diversity" (#5788-96, 36 months, $20,850). October, 1996 to September, 1999.

Rhode Island Wild Plant Society Educational Grant, "Genetic population structure in Sea Lavender (*Limonium carolinianum*)" ($500). April, 1993.

National Science Foundation Dissertation Improvement Grant (with A. Schmitt and D. Rand), "The evolutionary impact of natural selection, quantitative genetic variation, and gene flow in a salt marsh perennial, *Limonium carolinianum*" (DEB-9212849, 24 months, $8,000). September, 1992 to June, 1995.

Sigma Xi Grant-in-Aid of Research for "Phenotypic selection in *Arabis fecunda* Rollins." 1990, $616.

Sigma Xi Grant-in-Aid of Research for "The breeding system and relative fitness of selfed and outcrossed progeny in *Arabis fecunda* Rollins." 1989, $700.

Intramural Grants

Current

None.

Pending

None.

Past

Georgetown University, Annual Research Grant, "Ecological genetics of the salt marsh plants *Spartina patens* and *S. alterniflora*." 12/2022-12/2023, $7680.

Georgetown University, Graduate School of Arts and Sciences, Summer Academic Grant, "Patterns and causes of molecular clock variation in annual and periodical cicadas." 6/2018 - 8/2018. $10,000.

Georgetown University, Graduate School of Arts and Sciences, Competitive Grants-in-Aid, with Gina Wimp "Ecological-evolutionary coupling in a community of plants, herbivores, and predators." 4/2017-4/2018. $2000.

Georgetown University, Graduate School of Arts and Sciences, Competitive Grants-in-Aid, "Comparing genetic diversity in a foundation plant species and its herbivores." 4/2014-3/2015. $795.

Georgetown University Initiative on Technology-Enhanced Learning (ITEL), "Web-based computer simulation exercises for the study of evolutionary genetics." May, 2013 - May, 2014. $15,000. See https://itel.georgetown.edu/projects/hamilton/.

Georgetown University Environment Initiative pilot grant (with J. Parker, Smithsonian Environmental Research Center), "Testing for ecological impacts on intraspecific genetic variation in tulip poplar in a forest regeneration experiment." May, 2012 - May, 2014. $15,000.

Georgetown University, Graduate School of Arts and Sciences, Competitive Grants-in-Aid, "Comparing rates of pollen and seed gene flow in the invasive plant *Phragmites australis*." 6/2010-2/2011. $2000.

Georgetown University, Graduate School of Arts and Sciences, Competitive Grants-in-Aid (with Gina Wimp), "Microsatellite genetic markers for two species of planthoppers." 6/2010-2/2011. $2000.

Georgetown University Reflective Engagement in the Public Interest Project "Connecting Urban Ecology and Environmental Public Policy: Toward a Model for Environmental Justice" PI Ali Whitmer, Georgetown College and co-PI's Peter Armbruster, Matthew Hamilton & Gina Wimp in Dept. of Biology, Georgetown University; Lindsay Wiley & Laura Anderko, O'Neill Institute, NHS and Georgetown Law Center; J. Morgan Grove, USDA Forest Service and Michael Galvin, Casey Tree Foundation. July, 2010 – July 2011, $20,000.

Georgetown University, Center for the Environment education grant, "Long-term monitoring of phenology and mating patterns in urban tree populations." July, 2009 – July 2010, $2,000.

Georgetown University, Graduate School of Arts and Sciences, Pilot Research Project Grant (with co-PIs Gina Wimp and Peter Armbruster), "Integrating landscape ecology and population genetics to understand the effects of habitat fragmentation." July, 2008 – June 2009, $10,000.

Georgetown University, Graduate School of Arts and Sciences, International Initiatives Grant, "Cassowary mediated fruit dispersal in Australian rainforests." July, 2005, $5,730.

Georgetown University, Graduate School of Arts and Sciences, Pilot Research Project Proposal, "Comparing population structure estimates from two organelle genomes to determine the mechanisms of population subdivision in the tropical tree *Corythophora alta*." July, 2002 to June, 2003, $10,000.

Georgetown University, Junior Faculty Research Fellowship. Fall semester, 2002, $13,500.

Georgetown University Research Opportunities Program (GUROP), research stipends for undergraduate students Kyle Brown and Stephanie Steele (2002, 2003).

Georgetown University, Graduate School of Arts and Sciences, Non-Competitive Grants-in-Aid. 2001-2005, $300 per year.

Georgetown University, Graduate School of Arts and Sciences, Competitive Grants-in-Aid (with Martha R. Weiss), "Evolution of floral phenotype and floral color change in *Lupinus*.". February, 2001 to June, 2001, $1500.

Georgetown University Summer Academic Grant, "Tropical forest fragmentation and future genetic diversity in the canopy tree *Corythophora alta.*" 1998, $6,000.

Fellowships

Friends of the National Zoo Postdoctoral Fellowship, 1996-1997.

Smithsonian Institution Postdoctoral Fellowship, 1995-1996.

Teaching Experience

Workshop in population genetics for the Armed Forces DNA Identification Laboratory, Research Section. Workshop combined lectures with computer-based simulation and data analysis exercises. (19-23 July, 2010)

Foundations of Biology II (BIOL 104). Introduction to evolutionary biology, organismal biology and ecology based around interactive classroom techniques to engage students. Three 75 minute lectures and one 75 minute discussion section per week. (2009-2011)

Evolutionary Processes (BIOL 251 or 185 or 1850). Survey of basic evolutionary patterns and mechanisms of evolutionary change. Three 50 minute lectures and one 75 minute discussion section per week. (1999-2007, 2016-present)

Molecular Evolution (BIOL 360). Advanced undergraduate and introductory graduate course on the fundamentals of genetic divergence and phylogenetics. Topics covered include genetic drift and natural selection, neutral theory, nucleotide substitution models, genetic distance and correction models, and phylogeny estimation with distance, parsimony, and maximum likelihood. Extensive use of simulations and computer estimation software for exercises. (2013-2017)

Population Genetics (BIOL 367 or 413 or 4535). Advanced undergraduate and introductory graduate course on the fundamentals of population genetics with a focus on polymorphism. Topics covered include autozygosity, genetic drift, effective population size, gene flow and

population structure, natural selection, coalescence, quantitative genetics and aspects of molecular evolution. Extensive use of spreadsheet simulations and simulation software for problem sets. (1998-present)

Issues in evolutionary biology (BIOL 451) Seminar to discuss primary literature in evolutionary biology with the goal of giving students insight into contemporary research efforts and results, as well as an understanding of the conceptual origins of ideas that motivate contemporary research. (2021-present)

Graduate Foundations in Ecology, Evolution and Behavior (BIOL 501). Graduate reading seminar covering fundamental primary literature in ecology, evolution, and behavior. One three hour session per week. (instructor 2000, 2004; contributing instructor 2002, 2008)

Graduate Survival Skills (BIOL 505). Graduate reading and writing seminar for first-year doctoral students organized into four modules of general writing, proposal writing, communication and presentation, and responsible conduct of research. I designed the curricula for and lead the general writing and RCR segments in 2015.

Lecturer/group leader, Biological Dynamics of Forest Fragments Project field course, Manaus, Brazil. Lead graduate students in field exercise to estimate phenotypic selection and lectured on population genetics. (1997)

Teaching assistant, Brown University. Responsible for discussion and laboratory sections, grading, logistical organization, and occasional lectures for courses in Animal Behavior, Ecology, Evolutionary Biology, Introduction to Genetics, Evolutionary Biology, Mathematical Modeling in Biology, and Problems in Field Biology. (1990-1995)

The Art and Science of Fly Fishing, Brown University continuing education class. Covered basic aquatic insect and fish biology, fly tackle and leaders, basic fly tying and fly selection as well as a field trip to a trout stream. (1993-1995)

Research Mentorship

Sabbatical Host

Dr. John Braverman, St. Joseph's University, Philadelphia, PA. (August-December, 2016).

Dr. John Epifanio, Illinois Natural History Survey, Champaign-Urbana, IL. (October, 2007-April, 2008).

Postdoctoral fellows

Sivan Rottenstreich-Leviyang – 2005-2008; currently an Associate Professor, Dept. of Mathematics, Georgetown University.

Bryan Wood – 2003-2005; currently working in applied mathematics in private industry.

PhD students

Charles Minsavage-Davis

Amy Battocletti - "The population and ecological genetic effects of habitat fragmentation in a salt marsh plant and arthropod herbivore" (MS completed May, 2017)

Christopher Drummond, "Population structure and evolution of floral phenotype in *Lupinus* (Fabaceae)" (PhD completed January, 2006)

Ricardo Gutierrez Ozuna, "Population genetic differentiation, mating system, and effective population size of the tuliptree (*Liriodendron tulipifera* L.) in the mid-Atlantic United States" (PhD completed January, 2018)

David H. Soria-Hernanz, "Rates of molecular evolution across chloroplast and mitochondrial genomes in the Lecythidaceae" (PhD completed May, 2007)

Doctoral committees

Current:
Betsy Collins, George Mason University, Systematic Botany (Thesis mentor: Andrea Weeks)

Past:
Ezra Kottler, George Washington University, Biological Sciences (Thesis mentor: Keryn Gedan)

Jewel Tomasula, Georgetown University, Department of Biology (Thesis mentor: Gina Wimp)

Anna Bennett, Georgetown University, Department of Biology (Thesis mentor: C. Elsik)

Maryam Farzad, Georgetown University, Department of Biology (Thesis mentors: H. Elmendorf and M. Weiss)

Nadja Lepsch-Cuna, National Institute for Research in the Amazon (INPA), Department of Ecology, Manaus, Brazil (Thesis mentor: C. Gascon)

Aaron Howard, Georgetown University, Department of Biology (Thesis mentor: E. Barrows)

Deborah Lynn Mead, Georgetown University, Department of Biology (Thesis mentor: E. Barrows)

Colin Rose, University of Maryland, College Park, Department of Biology (Thesis mentor: M. Hare)

Shu Tao, Georgetown University, Department of Biology (Thesis mentor: C. Elsik)

Smilja Teodorovic, Georgetown University, Department of Biology (Thesis mentor: H. Elmendorf)

Jennifer Urbanski, Georgetown University, Department of Biology (Thesis mentor: P. Armbruster)

Doctoral qualifying exam committees

Vanessa Morales (2024)
Charles Minsavage-Davis (2023)
Jewel Lipps Tomasula (2018)
Ricardo Gutierrez Ozuna (2012)
Stephen Baker, Lillian Power, and Scott Williams (2010-2011)

Anna Bennett, Libeng Shen, Shahram Solaymani-Mohammadi, and Shu Tao (2008-2009)
Banu Saritas-Yildirim (2007-2008)
Aaron Howard and Chris Williams (2006-2007)

Undergraduate students

Undergraduate Senior Theses
Sean Cole (2024)
Billie McGuire (2022, co-mentored with Gina Wimp)
Emily Lu (2021)
Jack McGuire (2018)
Christian Yon (2016)
Meredith Burns, Meaghan Keefe, Alexander O'Neill (2015)
Marisa McNamara, Andrew Ambrosy (2007)
Kyle Brown, Maung Hlaing (2004)
Rachel I. Adams, David Fernandez and Young Choe (2003)
Gabriel Rizzuto and Gerard Baltazar (2002)
Dev Gopalan, Rafael Tajada and Brooke Weinstein (2001)
James Lister (1999)

Student Awards and Recognition

Rachel I. Adams: recipient of Chapman medal for Outstanding Thesis Research in the Biology Department (2003); Associate Membership in Sigma Xi (2002).

Gerard Baltazar: Associate Membership in Sigma Xi (2002)

Amy Battocletti: National Science Foundation Graduate Research Fellowship

Kyle Brown: Zukowski Summer Research Fellowship (2002) and Goldwater Scholarship recipient (2003) ; recipient of Chapman medal for Outstanding Thesis Research in the Biology Department (2004); Associate Membership in Sigma Xi (2004)

Christopher Drummond: National Science Foundation predoctoral graduate fellow; Explorer's Club Washington Field Research Grant ($1000); California Native Plant Society Educational Grant ($500); Georgetown University 2007 Harold N. Glassman Dissertation Award in Science

Ricardo Gutierrez Ozuna: CONACYT (National Council of Science and Technology, Mexico) Doctoral Fellowship 2011-2015. Georgetown Environment Initiative Graduate Student Grant-in-Aid ($7700).

David H. Soria-Hernanz: Spanish Government, Ministry of Education doctoral fellowship from the Program for Formation and Refinement of Postgraduates (4 years tuition and stipend); Cosmos Club Foundation Award ($1500)

University and Community Activities

Departmental Service

Co-Director, Committee on Undergraduate Students & Studies (2024 - present)
Member, Committee on Undergraduate Students & Studies, Director, Environmental Biology major (2022-2024)

Biology library representative (2019-2024)
Member, Ecologist Search Committee (2014-2015)
Co-Director, Environmental Biology major (2007 – 2015)
Member, Committee on Undergraduate Students and Studies (2008 – 2014)
Member, Biology of global health Search Committee (2009-2010)
Chair, Laboratory Assistant Professor Search Committee (2009-2010)
Rank and Tenure dossier preparer (2009-2010)
Chair, Comparative Anatomy adjunct search committee (Fall 2007)
Member, Bioinformatics Search Committee (2006-2007)
Member, Ecologist Search Committee (2006-2007)
Member, Ecologist / Evolutionary Biologist Search Committee (2002-2003)
Biology Committee for Graduate Students and Studies (CGSS) (1998-2002, co-chair 2001–2002)
Departmental Representative for Computing and Information Technology (1999-2006)
Academic advisor to about 20 Biology majors annually (1999-present)

College and University Service
Member, College Executive Council, Natural Sciences & Math elected representative (two terms 2020-2024, vice chair for 2023-2024)
Member, Provost's Office Research Awards Committee, (2022-2024)
Reviewer, Internal Research Grants and Leave Requests, Provost's Office (2018-2021)
Biology library representative (2020-2024)
Member, Blommer Sciences Library Review Committee (2019)
Member, Graduate School review committee for Glassman dissertation prize (2018)
Faculty Chair, Georgetown Environment Initiative steering committee (2012 – 2015)
Chair, College Curriculum Committee (2007-2011)
Member, Admissions Committee (2008-2009, 2020-2021)
Member (*ex officio* as CCC chair), College Executive Council (2007 - 2011)
Member, University *ad hoc* External Awards Committee (2008-2010)
Member, Graduate Dean's Taskforce on Systems Biology (2007)
Member, College Curriculum Committee (2005 to present)
Member, University Computer Services Advisory Committee (2000-2008)
Advanced Research Computing (ARC) Advisory Committee (2000 to 2010)
Manager, Main campus shared DNA sequencing facility (2001 to present)
Member, selection committee for College Dean's Awards for Excellence in Teaching (2005-2006)
Member, Graduate School Dean's Research Subcommittee on Core Facilities, Genomics Core Facility Working Group (2002 to 2005)
Member, Working Group on Masters Program in Applied Math and Statistics (2003)
Member, University Taskforce on Bioinformatics, Statistics and Computing (2002)
Member, University Librarian Search Committee (2000-2001)

Community service
Alumnus Interviewer, University of Chicago, Alumni Schools Committee (1993-1999)
Contributed to the design and construction of exhibits in the "Amazonia Gallery" at the National Zoological Park (1996-1998)

Nature walk leader, Rhode Island Wild Plant Society (1995)
Member, Rhode Island taskforce, New England Plant Conservation Program (1993-1995)

Professional Service

Editor

Associate Editor, Frontiers Evolutionary and Population Genetics (specialty section of Frontiers in Genetics, Frontiers in Ecology and Evolution, and Frontiers in Plant Science), 2021-present.

Referee

Grant proposals

National Science Foundation
NSF panelist, 2016, 2019, 2020, 2021, 2022, 2023.
NSF BIO NRT panelist, 2019.
NSF BIO REU panelist, 2016, 2017.
NSF-NATO Postdoctoral Fellowship panelist, 1999, 2000.
Ad hoc reviewer for Animal Behavior, Evolutionary Processes, International Research Fellows Program, & Population Biology panels.
Graduate Women in Science Fellowship reviewer, Smithsonian Institution, Office of Fellowships and Grants, *ad hoc* grant proposal reviewer.
Virginia Sea Grant Program

Journal manuscripts

Acta Amazonica, Applications in Plant Sciences, BioScience, BioTechniques, BMC Evolutionary Biology, Conservation Genetics, Canadian Journal of Botany, Diversity and Distributions, Ecology, Evolution, Fisheries Management, Fish and Fisheries, Frontiers in Ecology and the Environment, Frontiers in Ecology and Evolution, Frontiers in Genetics, Frontiers in Plant Sciences, Genetics, Genetics and Molecular Biology, Heredity, International Journal of Plant Sciences, International Journal of Data Mining and Bioinformatics, Molecular Biology and Evolution, Molecular Breeding, Molecular Ecology, National Geographic magazine, New Phytologist, Proceedings of the National Academy of Sciences, PLOS One.

Books

Reviewer for American Fisheries Society book *Northeast Atlantic Coast Striped Bass Fisheries Management.*
Reviewer for 9th Edition of Campbell et al. *Biology* published by Pearson Education.
Member, Advisory Board for Hillis et al. *Concepts of Life* by Sinauer Associates.

Academic Appointment

Faculty reappointment reviewer, Swarthmore College (2000)
Tenure and promotion reviewer, University of San Francisco (2006)
Tenure and promotion reviewer, Virginia Commonwealth University (2009)
Tenure and promotion reviewer, Duquesne University (2019)

Panels

Mid-Atlantic Fishery Management Council, Communication and Outreach advisory panel member (2021-2024)

Society memberships

American Association for the Advancement of Science, Botanical Society of America, Ecological Society of America, Genetics Society of America, Society for Molecular Biology & Evolution, Society for the Study of Evolution, Sigma Xi

Presentations

Invited Seminars

The College of William and Mary (November, 2023)
George Mason University, Dept. of Biology (2014)
University of Maryland, Center for Environmental Science, Chesapeake Bay Lab (2013)
University of Virginia, Biology Dept., Charlottesville, VA (2010)
University of Maryland, College Park, MD, BEES seminar series (2009)
Emory University, Dept. of Biostatistics, Atlanta, GA (2009)
Queens University Biological Station, Kingston, Ontario (2008)
Washington Biologists Field Club, Washington, DC (2008)
Brown University, Dept. of Ecology and Evolutionary Biology (2007)
George Washington University, Dept. of Biological Sciences, Washington, DC (2006)
University of Melbourne, Department of Botany, Melbourne, Australia (2005)
New York Botanical Garden, New York, NY (2004)
New England Biolabs, Beverly, MA (2004)
Smithsonian Institution, National Zoological Park, Washington, DC, Dept. of Zoological Research (2002)
University of Maryland, College Park, MD, BEES seminar series (2002)
Gettysburg College, Gettysburg, PA, Dept. of Biology (2001)
University of Maryland, Baltimore County, MD, Dept. of Biology (2001)
Georgetown University, Washington, DC, Dept. of Biology (1998)
George Mason University, Dept. of Biology (1997)
Smithsonian Institution, National Museum of Natural History, Washington, DC, Dept. of Botany (1997)
Smithsonian Institution, National Zoological Park, Washington, DC, Dept. of Zoological Research (1996)
Pennsylvania State University, State College, PA, Dept. of Biology (1995)
Brown University, Providence, RI, Dept. of Ecology and Evolution (1991 -1995)

Symposia

Invited participant at the 10th Annual German-American Frontiers of Science Symposium sponsored by the U. S. National Academy of Sciences and the Alexander Von Humboldt Foundation (June, 2004).

Invited presentation "Relative rates of pollen and seed gene flow in the tropical tree *Corythophora alta* estimated with nuclear and chloroplast DNA markers" at the July, 2004 meeting of the Association for Tropical Biology and Conservation, Miami, FL.

Symposium co-organizer (with P. Aldrich, C. Dick and J. Kress), "Population genetics and gene flow in tropical plants" at the 1998 meeting the American Institute of Biological Sciences member societies, Baltimore, MD.

Presentations at professional meetings

Hamilton M.B. "Ecological genetics of clonal plants, estimating the rate of clonal reproduction using spatial genetic data, and an application in the salt marsh plant *Spartina patens*." Talk at Mid-Atlantic Chapter of the Ecological Society of America Annual Meeting, April, 2023 at University of Delaware.

Camille Gaston, Ashley Hyeju Jeong, Charles D. Minsavage-Davis, Ezra J. Kottler, and Matthew B. Hamilton. "Clonal structure and landscape genetics of Long Island, NY populations of the salt marsh plant *Spartina patens*." Poster presentation at Mid-Atlantic Chapter of the Ecological Society of America Annual Meeting, April, 2023 at University of Delaware.

Gutierrez-Ozuna, R., McGuire, J., and Hamilton M.B. Testing the urban homogenization hypothesis: genetic effective number of breeders (N_b) in the long-lived tulip tree *(Liriodendron tulipifera).* Poster presentation at Mid-Atlantic Chapter of the Ecological Society of America Annual Meeting, April 7-8, 2018 at Rutgers University-Newark NJ.

Tsai, G., Gaither, C., Brady, M., Battocletti, A., Wimp, G., and Hamilton M.B. "Tests for genetic edge and area effects in natural patches of the salt marsh plant *Spartina patens.*" Poster presentation at Mid-Atlantic Chapter of the Ecological Society of America Annual Meeting, April 7-8, 2018 at Rutgers University-Newark NJ.

Battocletti, A, G. Wimp, and M. B. Hamilton. "Smaller effective population size near habitat edge in a specialist herbivore." Poster presentation at the 2015 Ecological Society of America meeting, Baltimore, MD.

Keefe, M. R., and M. B. Hamilton. "Impact of genetic relatedness and functional genetic diversity on green roof community performance." Poster presentation at the 2015 Ecological Society of America meeting, Baltimore, MD.

Braverman, J. M., M. B. Hamilton and Brent A. Johnson. "Annual *Arabidopsis thaliana* has faster substitution rates than perennial *A. lyrata* at numerous loci, consistent with the plant generation time hypothesis" Poster presentation at the 2014 Society for the Study of Evolution meeting, NC State, Raleigh, NC.

Matthew B. Hamilton, Caroline Sheridan, Nathan Poslusny, Brent A. Johnson and Sivan Leviyang "Recent and Historic Samples Show Low Genetic Effective Population Size but No Genetic Bottleneck in Chesapeake Bay Striped Bass (*Morone saxatilis*)" Poster presentation at the 2013 Society for Conservation Biology meeting, Baltimore, MD.

Hamilton, M. B., Sivan Leviyang and Nathan Poslusny, "Temporal genetic variation in striped bass." Presentation by Sivan Rottenstreich-Leviyang at the 2008 Society for the Study of Evolution meetings, University of Minnesota, St. Paul, MN.

Hamilton, M. B. "Paternity patterns in fragmented and continuous forest plots in the Amazon tree *Corythophora alta* (Lecythidaceae)." Presentation by M. B. Hamilton at the 2006 Society for the Study of Evolution meetings, SUNY Stony Brook, Stony Brook, NY.

Nuin, P. and M. B. Hamilton. "PopGeneS^2 simulation software for teaching and learning population genetics." Poster presentation by M. Hamilton at the 2006 Society for the Study of Evolution meetings, SUNY Stony Brook, Stony Brook, NY.

Drummond, C. and M. B. Hamilton. "Hierarchical genetic variation at a species boundary in *Lupinus microcarpus* (Leguminosae): implications for the genetic delimitation of species." Presentation by C. Drummond at the 2006 Society for the Study of Evolution meetings, SUNY Stony Brook, Stony Brook, NY.

Miller, J. R and M. B. Hamilton. "F_{ST} and Q_{ST} under neutrality." Presentation by J. Miller at the 2006 Society for the Study of Evolution meetings, SUNY Stony Brook, Stony Brook, NY.

Brown, K., R. Adams, and M. B. Hamilton. "The impact of microsatellite electromorph size homoplasy on multilocus population structure estimates in a tropical tree (*Corythophora alta*) and an anadromous fish (*Morone saxatilis*)." Poster presentation by K. Brown at the June, 2004 meetings of the Society for the Study of Evolution in Fort Collins, CO.

Hamilton, M. B., K. Brown, G. Baltizar, B. Weinstein, and C. A. Lund. "Estimating breeding population structure of striped bass (*Morone saxatilis*) in the Chesapeake watershed with nuclear microsatellite loci." Poster presentation at the 2002 American Fisheries Society meetings, Baltimore, MD.

Hamilton, M. B. and J. R. Miller. "Relative rates of pollen and seed gene flow in the tropical tree *Corythophora alta*." Presentation by M. Hamilton at the 2001 Society for the Study of Evolution meetings, University of Tennessee, Knoxville, TN.

Lepsch-Cunha, N., and M. B. Hamilton. "Adult phenology and transplanted seedling success among continuous, fragmented and secondary growth tropical forest in the palm *Oenocarpus bacaba*." Poster presentation at the 2001 Society for the Study of Evolution meetings, University of Tennessee, Knoxville, TN.

Braverman, J. M., D. Soria, and M. B. Hamilton. "CpDNA evolution in the Amazonian trees of Lecythidaceae." Poster presentation at the 2001 Society for the Study of Evolution meetings, University of Tennessee, Knoxville, TN.

Hamilton, M. B. "Successful seed dispersal measured with chloroplast DNA polymorphism is highly localized in a Brazilian canopy tree, *Corythophora alta* (Lecythidaceae)." Presentation at the 1998 American Institute of Biological Sciences member societies meeting, Baltimore, MD.

Hamilton, M. B. "Fingerprint-based spatial genetic tests for isolation by distance and local adaptation in the coastal plant *Limonium carolinianum*." Presentation at the 1997 Society for the Study of Evolution meetings, University of Colorado, Boulder, Boulder, CO.

Hamilton, M. B. "The genetic impacts of tropical forest fragmentation on plant mating patterns and population structure." Poster presentation at the 1997 Society for the Study of Evolution meetings, University of Colorado, Boulder, Boulder, CO.

Hamilton, M. B. "Testing for genetic subdivision in a salt marsh plant: the spatial distribution of DNA fingerprint genotypes." Presentation at the1994 Population Biologists of New England Meeting, Amherst, MA.

Hamilton, M. B. "Ecologically important genetic variation in a salt marsh plant." Presentation at the 1994 Society for the Study of Evolution meetings, University of Georgia, Athens, GA.

Hamilton, M. B. "Will reintroduction preserve the genetic diversity in wild populations?" Poster presentation at the 1993 Center for Plant Conservation symposium "Restoring diversity: is reintroduction an option for endangered plants?", St. Louis, MO.

Popular Media Coverage

My collaborative research with Prof. Sivan Leviyang in mathematical biology was featured in the Georgetown College Research News web site in February, 2010 (http://college.georgetown.edu/88193.html).

I was interviewed for a PBS *Religion & Ethics NewsWeekly* story on Darwin's 200th birthday anniversary and ongoing debate over teaching evolution in public schools (http://www.pbs.org/wnet/religionandethics/episodes/february-6-2009/darwin-at-200/2165/).

My research was featured in the inaugural issue of Georgetown College Research News web site in November, 2006 (http://www1.georgetown.edu/college/research/14925.html).

The mobile notebook computer labs I designed and use for instruction were covered in a *Georgetown* magazine article on technology in the classroom (Winter 2003, p. 29-35).

Coverage of my 1999 Nature paper appeared in the *New York Times* Science Times section (09/14/99), the *Folha de Saõ Paulo* (a major daily paper in Saõ Paulo, Brazil, 09/09/99, p. 12), *Science & Vie* (a French monthly that covers science and technology for the general public, 10/99, 986:14), The Scientist (09/27/9, p.8) and *Georgetown* magazine.

Workshops

NIH, Office of Intramural Training & Education, Raising a Resilient Scientist workshop (held at Georgetown using recorded lectures and live discussions), June 12-16, 2023.

National Science Foundation BIO-REU principle investigator's meeting and workshop, Arlington, VA. March 30-April 1, 2017.

National Science Foundation Pan-REU principle investigator's meeting and workshop (by invitation), Arlington, VA. April, 2016.

Presenter and panelist, Georgetown University Center for New Designs in Learning and Scholarship workshop on using student response devices in the classroom. Dec., 2010.

Exemplar report on using iclickers to teach genetic drift in a large course (Nov. 2010): https://digitalcommons.georgetown.edu/blogs/clickers_cop/2010/11/08/matt-hamilton-exemplar-clicker-use-in-biology/#more-356

Panelist, Georgetown University Provost's Seminar on Teaching and Learning, "New approaches for improving student engagement in large enrollment classes." Jan. 20, 2010.

Presenter and panelist, Georgetown University Center for New Designs in Learning and Scholarship workshop on using student response devices in the classroom. April, 2009.

Co-organizer and attendee, Parallel Processing Workshop, Georgetown University, August 11-13, 2003. (A workshop to introduce researchers to algorithms and programming techniques for parallel computers).

Attendee, "Coalescent Theory" workshop, North Carolina State Summer Institute in Statistical Genetics, Raleigh, NC. June 11-13, 2003

Collaborators within the last 48 months

Dr. John Braverman SJ, Saint Joseph's University, Philadelphia, PA.
Dr. Keith A. Crandall, George Washington University, Washington, DC
Dr. Gina Wimp, Georgetown University, Washington, DC

Graduate and Postdoctoral Advisors

Dr. David M. Rand, Brown University (doctoral thesis advisor)
Dr. Robert C. Fleischer, Smithsonian Institution (postdoctoral advisor)