Matthew C. Fitzpatrick

University of Maryland Center for Environmental Science
Appalachian Lab
301 Braddock Road
Frostburg, MD 21532

mfitzpatrick@umces.edu
/mfitzpatrick.al.umces.edu
Office: (301) 689-7131
Cell: (301) 876-1425

Education

Ph.D., Ecology and Evolutionary Biology, University of Tennessee (2008)

M.S., Environmental Science, University of Montana (2003)

B.S., Mechanical Engineering, The Pennsylvania State University (1997)

Appointments

Assistant Professor, UMCES-Appalachian Laboratory (10/2009-present)

Research Associate, Harvard University (2009-2010)

Postdoctoral Fellow, Harvard Forest & University of Rhode Island (2008-2009)

Expertise

Development and application of quantitative methods for studying the causes and consequences of biological diversity, with an emphasis on: (1) understanding how historic and current processes shape species distributions, patterns of biodiversity, and range expansion of native and introduced species, and (2) developing spatially explicit predictions regarding the effects of environmental change on natural resources.

Awards and fellowships

Marine Estuarine Environmental Science Professor of the Year (2013)

US-IALE Outstanding Paper in Landscape Ecology – Honorable Mention (2012)

Arthur Yates Dissertation Fellowship. University of Tennessee; $15,000; (2007-2008)

Research Fellowship. Oak Ridge Institute for Science and Education; $15,000; (2004)

Publications

Total publications: 41
Total publications in peer-reviewed journals: 30
Total citations (ISI / Google Scholar): 692 / 1115
Average citations per paper: 24.7 / 37.2
H index: 12 / 16

Journal articles

In press

Fitzpatrick MC, Keller SR (in press) Ecological genomics meets community-level modeling of biodiversity: Mapping the genomic landscape of current and future environmental adaptation. *Ecology Letters*

2014

Gavin DG, **Fitzpatrick MC**, Gugger P, Heath K, Rodríguez-Sánchez F, Dobrowski S, Hampe A, Hu F, Ashcroft M, Bartlein P, Blois J, Carstens B, Davis E, de Lafontaine G, Edwards M, Fernandez M, Henne P, Herring E, Holden ZA, Kong W, Liu J, Magri D, Matzke NJ, McGlone MS, Saltré F, Stigall AL, Tsai YE, Williams JW (2014) Climate refugia: joint inference from fossil records, species distribution models and phylogeography. *New Phytologist* 204: 37-54

Ferrari J, Preisser EL, **Fitzpatrick MC** (2014) Modeling the spread of invasive species using dynamic network models. *Biological Invasions* 16: 949-960

Landesman WJ, Nelson DM, **Fitzpatrick MC** (2014) Soil properties and tree species drive beta-diversity of soil bacterial communities. *Soil Biology & Biochemistry* 76: 201-209

2013

Fitzpatrick MC, Sanders NJ, Normand S, Svenning JC, Ferrier S, Gove A, Dunn RR (2013) Environmental and historical imprints on beta-diversity: Insights from variation in rates of species turnover along gradients. *Proceedings of the Royal Society: Series B* 280, art. 1768 **Faculty of 1000 recommendation**

Fitzpatrick MC, Gotelli NJ, Ellison AM (2013) Maxent vs. Maxlike: Empirical comparisons with ant species distributions. *Ecosphere* 4: art55

Blois JL, Zarnetske PL, **Fitzpatrick MC**, Finnegan S (2013) Climate change and the past, present, and future of biotic interactions. *Science* 341: 499–504

Blois JL, Williams JW, **Fitzpatrick MC**, Jackson ST, Ferrier S (2013) Space can substitute for time in predicting climate-change effects on biodiversity. *Proceedings of the National Academy of Sciences* 110: 9374–9379

Elmore AJ, Julian JP, Guinn SM, **Fitzpatrick MC** (2013) Potential stream density in mid-Atlantic watersheds. *PLoS ONE* 8: e74819

Record S[#], **Fitzpatrick MC**, Finley A, Veloz S, Ellison AE (2013) Should species distribution models account for spatial autocorrelation? A test of model projections across eight millennia of climate change. *Global Ecology and Biogeography* 22: 760–771 [#]**Postdoc**

Blois JL, Williams JW, **Fitzpatrick MC**, Ferrier S, Veloz S, He F, Lui Z, Manion G, Otto-Bliesner B (2013) Modeling the climatic drivers of spatial patterns in vegetation composition since the Last Glacial Maximum. *Ecography* 36: 460–473

2012

Fitzpatrick MC, Preisser EL, Porter A, Elkinton J, Ellison AE (2012) Modeling range dynamics in heterogeneous landscapes: Invasion of the hemlock woolly adelgid in eastern North America. *Ecological Applications* 22: 472–486

Broennimann 0[†], **Fitzpatrick MC**[†], Pearman P[†], Petit-Pierre B, Pellissier L, Yoccoz NG, Thuiller W, Fortin M-J, Randin C, Zimmermann N, Graham C, Guisan A (2012) Measuring ecological niche overlap from occurrence and spatial environmental data. *Global Ecology and Biogeography* 21: 481–497 [†]**Co-first author; 4th Most accessed GEB article in 2013**

2011

Fitzpatrick MC, Sanders NJ, Ferrier S, Longino JT, Weiser MD, Dunn RR (2011) Forecasting the future of biodiversity: a test of single- and multi-species models for ants in North America. *Ecography* 34: 836–847

Jenkins CN, Andersen AN, Arnan X, Brühl CA, Cerda X, Ellison AM, Fisher BL, **Fitzpatrick MC**, Gotelli NJ, Gove AD, Lattke JE, Lessard JP, McGlynn TP, Menke SB, Parr CL, Philpott SM, Sanders NJ, Weiser MD, Dunn RR (2011) Exploring the limits to our knowledge of ant diversity in light of climate change. *Diversity and Distributions* 17: 652–662

Belote T, Prisley S, Jones R, **Fitzpatrick MC**, de Beurs K. (2011) Forest productivity and tree diversity relationships depend on ecological context within mid-Atlantic and Appalachian forests. *Forest Ecology and Management* 261: 1315–1324

Turner JL[‡], **Fitzpatrick MC**, PreisserEL (2011) Simulating the dispersal of hemlock woolly adelgid (Hemiptera: Adelgidae) in the temperate forest understory. *Entomologia Experimentalis et Applicata* 141: 216–223 [‡]**Undergraduate student**

2010

Fitzpatrick MC, Preisser EL, Porter A, Elkinton J, Waller LA, Carlin BP, Ellison AE (2010) Ecological boundary detection using Bayesian areal wombling. *Ecology* 91: 3448–3455

Svenning JC, **Fitzpatrick MC**, Normand S, Graham CH, Pearman PB, Iverson LR, Skov F (2010) Geography, topography, and history affect realized-to-potential tree species richness patterns in Europe. *Ecography* 33: 1070–1080 **Faculty of 1000 recommendation; 2012 US-IALE Outstanding Paper in Landscape Ecology – Honorable Mention**

2009

Ingwell L, Brady J, **Fitzpatrick MC**, Maynard B, Casagrande R, Preisser E (2009) Intraspecific variation in *Tsuga canadensis* foliar chemistry. *Northeastern Naturalist* 16: 585–594

Fitzpatrick MC, Preisser E, Ellison AE, Elkinton J (2009) Observer bias and the detection of low-density populations. *Ecological Applications* 19: 1673–1679

Fitzpatrick MC, Hargrove WW (2009) The projection of species distribution models and the problem of non-analog climate. *Biodiversity and Conservation* 18: 2255–2261

Gove A, **Fitzpatrick MC**, Majer JD, Dunn RR (2009) Dispersal traits linked to range size through range location, not dispersal ability in Western Australian angiosperms. *Global Ecology and Biogeography* 18: 596–606

Dunn, RR, Agosti D, Andersen A, Arnan X, Bruhl C, Cerdá X, Ellison A, Fisher B, **Fitzpatrick MC**, Gibb H, Gotelli NJ, Gove AD, Guenard B, Janda M, Kaspari M, Laurent EJ, Lessard JP, Longino JT, Majer JD, Menke SB, McGlynn TP, Parr CL, Philpott SM, Pfeiffer M, Retana J, Suarez AV, Vasconcelos HL, Weiser MD, Sanders NJ (2009) Climatic drivers of hemispheric asymmetry in global patterns of ant species richness. *Ecology Letters* 12: 324–333

2008

Fitzpatrick MC, Dunn RR, Sanders NJ (2008) Datasets matter, but so do evolution and ecology. *Global Ecology and Biogeography* 17: 562–565

Fitzpatrick MC, Gove AD, Sanders NJ, Dunn RR (2008) Climate change, plant migration and range collapse in a global biodiversity hotspot: The *Banksia* (Proteaceae) of Western Australia. *Global Change Biology* 14: 1337–1352

2007

Fitzpatrick MC, Weltzin JF, Sanders NJ, Dunn RR (2007) The biogeography of prediction error: Why does the introduced range of the fire ant over-predict its native range? *Global Ecology and Biogeography* 16: 24–33

Sanders NJ, Weltzin JF, Crutsinger GM, **Fitzpatrick MC**, Nuñez MA, Oswalt CM, Lane KE (2007) Multiple controls on a plant invasion: Insects mediate the interactive effects of propagule supply and resource availability. *Ecology* 88: 2383–2391

Sanders NJ, Lessard JP, **Fitzpatrick MC**, Dunn RR (2007) Temperature, but not productivity or geometry, predicts elevational diversity gradients in ants across spatial grains. *Global Ecology and Biogeography* 16: 640–649

Dunn RR, Sanders NJ, **Fitzpatrick MC**, Laurent E, Lessard JP, Agosti D, Andersen AN, Bruhl C, Cerda X, Ellison AM, Fisher BL, Gibb H, Gotelli NJ, Gove A, Guenard B, Janda M, Kaspari M, Longino JT, Majer J, Mcglynn TP, Menke SB, Parr CL, Philpott SM, Pfeiffer M, Retana J, Suarez AV, Vasconcelos, HL (2007) Global ant biodiversity and biogeography – A new database and its possibilities. *Myrmecological News* 10: 77–83

In review

Gibb H, Sanders NJ, Dunn RR, Watson S, Photakis M, Abril S, Andersen AN, Angulo E, Armbrecht I, Arnan X, Baccaro FB, Boulay R, Castracani C, Del Toro I, Delsinne T, Diaz M, Donoso DA, Enríquez ML, Fayle TM, Feener DH, **Fitzpatrick MC**, Gómez C, Grasso DA, Groc S, Heterick B, Hoffmann BD, Lach L, Lattke J, Leponce M, Lessard JP, Longino J, Lucky A, Majer J, Menke SB, Mezger D, Mori A, Paknia O, Pearce-Duvet J, Pfeiffer M, Philpott S, de Souza JLP, Tista M, Vonshak M, Parr CL (in 2nd review) Climate regulates the effects of disturbance on ant assemblage structure. *Proceedings of the Royal Society: Series B*

Pylant C*, Nelson DM, **Fitzpatrick MC**, Gates JE, Keller SR (in revision) Geographic origin and population dynamics of bats killed at wind-energy facilities. *Targeted for Ecological Applications* *Graduate student

Book chapters

Dunn RR, **Fitzpatrick MC** (2012) Every Species is an Insect (or Nearly So): On insects, climate change, extinction and the biological unknown. In: *Saving a Million Species: Extinction Risk from Climate Change*. Edited by Hannah L

Sanders NJ, Dunn RR, **Fitzpatrick MC**, Carlton CE, Pogue MR, Parker CR, Simons TR (2009) Diverse elevational diversity gradients in Great Smoky Mountains National Park, USA. In: *Data Mining for Global Trends in Mountain Biodiversity*. Edited by Körner C, Spehn E

Fitzpatrick MC, Weltzin JF (2005) Ecological niche models and the geography of biological invasions: A review and a novel application. In: *Invasive plants: Ecological and Agricultural Aspects*. Edited by Inderjit

Reports

Conn C, Claggett S, Drake B, Dunn J, **Fitzpatrick MC**, Hairston-Strang A, Inouye D, Limpert D, Miles W, Samson D, Sprague E (2011) Forests and terrestrial ecosystems. *In* Boicourt K and Johnson ZP (eds) Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building societal, economic, and ecological resilience.

Serveiss V, Catanzaro D, **Fitzpatrick MC**, Hargrove WW, Eskew D (2008) Predicting future introductions of nonindigenous species to the Great Lakes. National Center for Environmental Assessment, Washington, DC. EPA/600/R-08/066F

Book reviews

Fitzpatrick MC (2011) Understanding the distribution of life on Earth in an age of phylogenetic systematics. *Landscape Ecology* 26:1049–1050

Fitzpatrick MC, Weltzin JF (2005) Characterizing ecosystem response to climate variability. *Global Ecology and Biogeography* 14:600–601

Popular articles

Fitzpatrick MC (2006) Spotted coral root leads a shady life of deception. *The Missoulian*

Fitzpatrick MC (2005) Bitterbrush adds history to native plant gardens. *The Missoulian*

Fitzpatrick MC (2003) Sticky sundew catches more than just insects. *The Missoulian*

Fitzpatrick MC (2003) High Tide on Flathead Lake. Audio essay for Field Notes, *KUFM, Montana Public Radio*

Products

Software

Manion G, Ferrier S, Lisk M, **Fitzpatrick MC** (2014) *gdm: Functions for Generalized Dissimilarity Modeling.* (https://r-forge.r-project.org/projects/gdm/)

Web applications

Lisk M, **Fitzpatrick MC** (2014) *Maryland stream biodiversity mapper.* (http://streammapper.al.umces.edu/streamsbiodiv.html)

Research funding

Total funding awarded: $3,451,370

Awarded

Assessment of climate change impacts on key terrestrial ecosystems and species in the Arabian Gulf countries. Environmental Agency Abu Dhabi & Climate Change Research Group; $130,169; (2015-2016); PI: MC Fitzpatrick

Combining genomics, remote sensing, and geospatial modeling to understand adaptation to growing season length in balsam poplar. National Science Foundation; $1,495,713; (2013-2018); PI: SR Keller; CoPIs: MC Fitzpatrick, AJ Elmore, DM Nelson, CD Stylinski

Collaborative research: Incorporating biotic interactions into models of species assemblages under climate change: A comparison of single-species and community-level approaches. National Science Foundation; $677,501 ($326,780 to UMCES); (2013-2016); PI: MC Fitzpatrick; CoPIs: JL Blois ($229,322), JW Williams ($121,399)

A biologically-optimized environmental classification of Maryland streams: Assessing impacts of stream burial and responses to climate change. NOAA Maryland Sea Grant; $138,842 (plus two-year graduate fellowship); (2012-2014); PI: MC Fitzpatrick; CoPI: AJ Elmore

Modeling coastal vulnerability for tidal reaches of the Potomac and Anacostia Rivers. National Park Service; $423,000; (2010-2015); PI: AJ Elmore; Co-PIs: MC Fitzpatrick, KAM Engelhardt, G Sanders

Assessing potential migration pathways and changes in effective population size of hoary bat populations in the central Appalachians. Maryland Department of Natural Resources Power Plant Research Program; $40,000; (2014-2016); PI: DM Nelson; CoPIs: MC Fitzpatrick, JE Gates, SR Keller

License for Google Map Engine. Google Earth for Educator's grant program; Fee waiver; (2014-2015); PI: MC Fitzpatrick

How representative are wind-turbine killed red bats of the broader population in Maryland? An Isotopic and genetic assessment. Maryland Department of Natural Resources Power Plant Research Program; $40,000; (2013-2014); PI: DM Nelson; CoPIs: MC Fitzpatrick, JE Gates, SR Keller

Continuing isotopic and genetic assessment of the impacts of wind-turbine mortality on bat populations in the central Appalachians. Maryland Department of Natural Resources Power Plant Research Program; $40,000; (2012-2014); PI: DM Nelson; CoPIs: MC Fitzpatrick, JE Gates, SR Keller

Review of climate change impacts on key terrestrial ecosystems and species in the Arabian Gulf countries. Environmental Agency Abu Dhabi & Climate Change Research Group; $4,000; (2012); PI: MC Fitzpatrick

A preliminary isotopic and genetic investigation of the impacts of wind-turbine mortality on bat populations in the central Appalachians. Maryland Department of Natural Resources Power Plant Research Program; $40,000; (2011-2013); PI: DM Nelson; CoPIs: MC Fitzpatrick, JE Gates, SR Keller

Improving forecasts of species responses to climatic change: Hierarchical Bayesian analysis of tree distributions across space and time. Department of Energy; $163,145; (2009-2011); PI: AM Ellison; CoPI: MC Fitzpatrick

Climate change, seed dispersal mutualisms and the future of biodiversity in Western Australia. National Science Foundation; $5000; (2006); PI: MC Fitzpatrick

An assessment of landscape connectivity for grizzly bears in the Greater Yellowstone Ecosystem. Yellowstone to Yukon Initiative; $4,000; (2004); PI: MC Fitzpatrick

Seminars and conference presentations

Invited departmental seminars

From genes to species assemblages: Using community-level models to understand and map biological variation. (2014) CSIRO Ecosystem Sciences, Canberra, ACT, Australia

Novel approaches to modeling and mapping patterns of stream biodiversity in Maryland. (2014) Maryland Department of Natural Resources, MANTA Seminar series. Annapolis, MD

The future of hemlock in eastern North America: Predicting the spread of the hemlock woolly adelgid under current and future climate. (2012) University of Maryland, Department of Entomology. College Park, MD

The future of hemlock in eastern North America: Predicting the spread of the hemlock woolly adelgid under current and future climate. (2012) West Virginia University, Division of Forestry and Natural Resources. Morgantown, WV

Modeling the impact of past and future climate change on global biodiversity hotspots. (2011) UMCES-Chesapeake Biological Laboratory. Solomons, MD

Promising the future: How well can we forecast climate change impacts on biodiversity? (2010) UMCES-Horn Point Laboratory. Cambridge, MD

Adapt, migrate, or go extinct: Forecasting the response of species to climate change. (2008) UMCES-Appalachian Laboratory. Frostburg, MD

Adapt, migrate, or go extinct: Forecasting the response of species to climate change. (2008) Harvard Forest, Harvard University. Petersham, MA

Biogeography and biological invasions: Using species distribution models to explore geographic ranges across space and time. (2006) Oak Ridge National Laboratory, Environmental Sciences Division. Oak Ridge, TN

Invited conference / workshop presentations

Fitzpatrick MC, Keller SR (2014) Using community-level models to map current and future patterns of adaptive genetic variation. International Biogeography Society Early Career Conference, 7-11 January, Canberra, ACT, Australia **Invited keynote**

Fitzpatrick MC (2013) What do we do with all these data? Modeling strategies for continental-scale ecology. Scaling UP: Population and Community Ecology - A workshop for early career scientists. 4-7 June, Linthicum Heights, MD

Fitzpatrick MC, Elmore AJ, Johnston MR, Guinn S, Weitzell R (2012) Mapping the distribution of stream biodiversity in Maryland. Maryland Water Quality Monitoring Council 18th Annual Conference. 6 December, Annapolis, MD

Fitzpatrick MC, Dunn RR, Sanders NJ (2008) Predicting the potential geographic spread of the red imported fire ant using climate envelope models: Return to sender? Workshop on Predicting the Spread of the Red Imported Fire Ant in California. 15 November, Stanford, CA

Conference presentations

Keller SR, **Fitzpatrick MC**, Chhatre VE (2014) Novel ecological genomic approaches for detecting adaptation along environmental gradients. NSF Plant Genome Research Program Annual Awardee Meeting, 4-5 September, Arlington, VA

Fitzpatrick MC, Keller SR (2014) Using community-level modeling to understand and map current and future spatial patterns of adaptive genetic variation. Ecological Society of America, 10-15 August, Sacramento, CA

Nieto-Lugilde D, **Fitzpatrick MC**, Maguire KC, Blois JL, Williams JW (2014) Vegetation changes during the late Quaternary: Predictive ability of community level models across time. Ecological Society of America, 10-15 August, Sacramento, CA

Stylinski CD, Keller SR, Elmore AJ, **Fitzpatrick MC** (2014) Scientists and volunteers partner to explore poplar phenology and vulnerability to climate change. Ecological Society of America, 10-15 August, Sacramento, CA

Maguire KC, Nieto-Lugilde D, Blois JL, **Fitzpatrick MC**, Williams JW (2014) Reconstructing vegetation distribution patterns through the late Quaternary: Incorporating species associations though community-level models. American Quaternary Association, 7-10 August, Seattle, WA

Fitzpatrick MC (2014) Spatial modeling of stream biodiversity in Maryland: Challenges and opportunities. Chesapeake Modeling Symposium, 28-29 May, Annapolis, MD

Johnston MR, **Fitzpatrick MC**, Elmore AJ, Guinn SM, Lisk MD (2014) Locally-measured vs. remotely-derived: The most effective predictor variables in stream biodiversity models. Chesapeake Modeling Symposium, 28-29 May, Annapolis, MD

Fitzpatrick MC, Keller SR (2014) Scaling from molecules to landscapes: Using community-level models to map current and future spatial patterns of adaptive genetic variation. US-International Association for Landscape Ecology, 12-16 May, Anchorage, AK

Johnston MR, **Fitzpatrick MC**, Elmore AJ, Mokany K, Guinn SM, Lisk MD (2014) Locally-measured vs. remotely-derived: The most effective predictor variables in stream biodiversity models. US-International Association for Landscape Ecology, 12-16 May, Anchorage, AK

Fitzpatrick MC, Keller SR (2013) Spatial analysis and predictive mapping of adaptive genetic variation using novel modeling approaches. International Biogeography Society, 9-13 January, Miami, FL

Blois JL, Williams, JW, **Fitzpatrick MC**, Jackson ST, Ferrier S (2013) Can space substitute for time in predicting climate-change effects on biodiversity? International Biogeography Society, 9-13 January, Miami, FL

Landesman WJ, Nelson DM, **Fitzpatrick MC** (2013) Metagenomic study of soil microbial community composition in relation to tree species, soil properties and geographic distance. Soil Ecology Society, 11-14 June, Camden, NJ

Keller SR, Elmore AJ, **Fitzpatrick MC**, Nelson DM, Soolanayakanahally R, Stylinski CD, Zalesny R (2013) Combining genomics, remote sensing, and geospatial modeling to understand adaptation to growing season length in balsam poplar. NSF Plant Genome Research Program Annual Awardee Meeting, 5-6 September, Arlington, VA

Johnston MR, **Fitzpatrick MC**, Elmore AJ, Guinn SM (2013) Using community-level models to predict patterns of biodiversity in Maryland streams. Annual Marine Estuarine Environmental Science Colloquium, 27-28 September, Cambridge MD

Williams JW, Blois J, Ferrier S, Manion G, **Fitzpatrick MC**, Veloz S, Liu Z, Otto-Bliesner B, He F (2012) Generalized Dissimilarity Modeling of Late-Quaternary Variations in Pollen-Based Compositional Dissimilarity. International Palynological Congress and International Organization of Palaeobotany, 23-30 August, Tokyo, Japan

Landesman WJ, Nelson DM, **Fitzpatrick MC** (2012) Assessing the relative importance of soil properties, tree type and distance on soil microbial community composition at multiple spatial scales. Ecological Society of America, 5-10 August, Portland, OR

Fitzpatrick MC, Sanders NJ, Normand S, Svenning JC, Ferrier S, Gove A, Dunn RR (2012) Climatic history, seed dispersal, and patterns of beta diversity in the floras of southwest Australia and northern Europe. Ecological Society of America, 5-10 August, Portland, OR

Blois J, Williams JW, **Fitzpatrick MC**, Ferrier S, Jackson ST (2012) Testing space-time substitution using paleoecological data. American Quaternary Association, 21-25 June, Duluth, MN

Guinn S, **Fitzpatrick MC**, Julian J, Elmore AJ (2011) Mapping headwater streams in the Potomac River basin. Maryland Water Monitoring Council 17th Annual Conference, 1 December, North Linthicum, MD

Williams JW, Blois J, Ferrier S, Manion G, **Fitzpatrick MC**, Veloz S, He F, Liu Z, Otto-Bliesner B (2011) Generalized Dissimilarity Modeling of Late-Quaternary Variations in Pollen-Based Compositional Dissimilarity. American Geophysical Union Fall Meeting, 5-9 December, San Francisco, CA

Elmore AJ, Julian J, Guinn S, Weitzell R, **Fitzpatrick MC** (2011) A River Runs Under It: Modeling the Distribution of Streams and Stream Burial in Large River Basins. American Geophysical Union Fall Meeting, 5-9 December, San Francisco, CA

Fitzpatrick MC (2011) Modeling the impacts of 120,000 years of climate change on global biodiversity hotspots. Ecological Society of America, 7-12 August, Austin, TX

Record S, **Fitzpatrick MC**, Ellison AM, Finley AO (2011) Exploring spatial autocorrelation and spatial random effects in tree species distribution models with the forest inventory and analysis data. Ecological Society of America, 7-12 August, Austin, TX

Fitzpatrick MC, Broennimann 0, Pearman P (2010) Evaluating environmental niches across space and time: biological signal or statistical artifact? 9th Meeting on Vegetation Databases, 22-25 February, Hamburg, Germany

Turner J, **Fitzpatrick MC**, Preisser EL (2010) Stratified dispersion: tracking long-distance dispersal events in the forest understory. Ecological Society of America, 1-6 August, Pittsburgh, PA

Fitzpatrick MC, Preisser E, Ellison A, Elkinton J, Porter A (2009) Ecological boundary detection using Bayesian areal wombling: A method to investigate factors influencing the distribution of species. Ecological Society of America, 3-7 August, Albuquerque, NM

Fitzpatrick MC, Preisser EL, Ellison AM, Elkinton J (2009) Observer bias and the detection of low-density infestations: A case study with the hemlock woolly adelgid. USDA Interagency Research Forum on Invasive Species, 13-16 January, Annapolis, MD

Ingwell L, Brady J, **Fitzpatrick MC**, Casagrande R, Maynard B, Preisser E (2008) Intraspecific terpenoid variation in eastern hemlocks and the potential for resistance to the hemlock woolly adelgid. Ecological Society of America, 3-8 August, Milwaukee, WI

Fitzpatrick MC, Dunn RR, Gove AD, Sanders, NJ (2007) Climate change, dispersal and the future of biodiversity in Western Australia. The International Mediterranean Ecosystems Conference, 2-5 September, Perth, Western Australia

Fitzpatrick MC, Dunn RR, Sanders NJ (2007) The biogeography of prediction error: Using invasive species to explore species-climate relationships across space and time. Colonization versus Invasion Conference, 25 February – 2 March, Ascona, Switzerland

Fitzpatrick MC, Dunn RR, Gove AD, Sanders NJ (2007) Simple dispersal model reduces uncertainty in range shifts predictions and reveals range dynamics under climate change. International Biogeography Society, 9-12 January, Tenerife, Canary Islands

Sanders NJ, Dunn RR, Lessard JP, **Fitzpatrick MC** (2006) What causes geographic variation in ant diversity? The International Union for the Study of Social Insects 2006 Congress. 30 July – 4 August, Washington, DC

Sanders NJ, Dunn RR, Lessard JP, **Fitzpatrick MC** (2006) Species-Energy Theory and the assembly of ant communities across spatial grains. Ecological Society of America Annual Meeting, 4-11 August, Memphis, TN

Fitzpatrick MC, Sanders NJ, Dunn RR (2006) Why does the introduced range of the fire ant over-predict its native range? Southern Appalachian Conference on Arthropod Biology, 7 October, Highlands, NC

Fitzpatrick MC, Weltzin JF (2005) Using invasive species to test the predictions of bioclimatic models. US-International Association for Landscape Ecology, 12-16 March, Syracuse, NY

Fitzpatrick MC (2005) Invasive species and bioclimatic models: the ecology of prediction errors. TERACC Global Change & Biodiversity Workshop, 1-4 May, Dourdan, France

Teaching and mentoring

Courses taught

Landscape Ecology (4 credits)

- Graduate-level course in MEES program offered Fall 2010, Fall 2012, and Spring 2015. Covers the interplay of pattern and process at landscape scales, with an emphasis on application to monitoring, conservation, and restoration in the Chesapeake watershed. Includes lectures, discussions and special projects. Future offerings will focus on the construction of heuristic spatial models in the R statistical programming language to simulate, analyze, and understand relationships between pattern and process.

Spatial Analysis and Modeling in R (1 credit)

- Graduate-level course in MEES program offered Fall 2013. Course introduced the use of the R statistical programming language as a spatial analysis, modeling, and graphing environment. Covered the creation, manipulation, visualization, and analysis of geospatial biodiversity and environmental data to explore ecological and evolutionary spatial patterns and processes. Included lectures, worked examples, and independent projects.

Introduction to Geographic Information Systems (2 credit)

- Graduate-level course in MEES program offered continuously. Course introduces GIS methods through a series of hand-on tutorials and followed by specific applications to the environmental sciences and a final project.

NordForsk Nordic Network on Species Range Dynamics (NORA) PhD Summer school on Species Distribution Modeling

- Week-long intensive graduate-level course taught at Sandbjerg, Denmark in 2010. Covers theory and application of species distribution modeling in ecology, biogeography, and macroecology. My role included giving guest lectures on the application of species distribution models to invasion biology and the incorporation of dynamic dispersal and population processes.

Graduate student mentoring

Current

Andy Gougherty, PhD exp 2019, *UMCES Presidential Fellow*

Previous

Miriam Johnston, MS 2014, *Maryland Sea Grant Research Fellow* (current position: PhD student, Harvard University, Department of Organismic and Evolutionary Biology)

Service on graduate student committees

Current

Kimberley Gardner (UMCES-AL, MEES); Sam Jantz (UM-CP, GEOG); Brittany Marsden (UM-CP, MEES); Ian McFadden (UM-CP, BIO); Mayda Nathan (UM-CP, ENTM); Roy Weitzell (UMCES-AL, MEES)

Previous

Cortney Pylant (MS 2014); Lauren McCheseney (MS 2010)

Postdoctoral researchers

Current

Diego Neito-Lugilde

Previous

Sydne Record (co-advised with AM Ellison, now an Assistant Professor at Bryn Marw)

Undergraduate students

Kavya Pradhan (2014); Nicholas Arnold (2012); David Moon (2010, 2011); Eliza Ledwell (2009); Jenna Turner (2009)

Service

Editorial boards

Associate Editor, *Diversity and Distributions* (2011-present) (IF=5.47)

Subject Editor, *Ecography* (2011-present) (IF=4.20)

Associate Editor, *Biological Invasions* (2009-2012) (IF=2.72)

Guest Editor, *Ecological Monographs* (1 article, 2010)

Reviews for journals

Biological Invasions, Biology Letters; CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources; Conservation Biology; *Diversity & Distributions; Ecography; Ecology; Ecology Letters; Ecological Monographs; Ecosphere*; *Frontiers in Ecology and the Environment; Global Change Biology; Global Ecology & Biogeography; Journal of Applied Ecology; Journal of Biogeography; Journal of Molluscan Studies; Methods in Ecology and Evolution; Myrmecological News; Nature Climate Change*; *Perspectives in Plant Ecology, Evolution, and Systematics; PLOS One; Trends in Ecology & Evolution*

Reviews for funding agencies

Macquarie University Research Fellowships; Maryland Agricultural Experiment Station; NOAA Maryland Sea Grant (*panel*); National Research Foundation, South Africa; National Science Foundation (*DDIG panel*); Netherlands Organization for Scientific Research, Board

of Science for Global Development (WOTRO); U.S. Civilian Research & Development Foundation

Workshops and symposia organized

2014

Workshop organizer, “Mapping streams and biodiversity in Maryland”. NOAA Maryland Sea Grant and Maryland Water Quality Monitoring Council

Symposium co-organizer, “Modeling and mapping spatiotemporal patterns of stream biodiversity in the Chesapeake Bay watershed”, Chesapeake Modeling Symposium, 28-29 May, Annapolis, MD

2013

Workshop co-leader, “Scaling UP: Population and Community Ecology - A Workshop for Early Career Scientists”. Ecological Society of America and NEON. 4-7 June, Linthicum Heights, MD

University and departmental service

UMCES Faculty Senate (2012-present)

UMCES Accreditation Self Study Working Group (2014)

UMCES Database Management Committee (2014)

UMCES MEES Curriculum Task Force (2013)

UMCES Faculty Convocation Co-organizer (2013)

MEES Colloquium Committee (2011)

Seminar Chair (2011)

Forest Ecologist Faculty Hiring Committee (2010, resulted in hiring of SR Keller)

State and regional service

NOAA Maryland Sea Grant Academic Advisory Committee (2014)

MADEClear Science Advisor (2013-present)

Member, *Maryland Commission on Climate Change, Adaptation: Forests and Terrestrial Ecosystems* (2009-2011)

Public service

Invited speaker: Biodiversity in a warming world: From the mountains of Maryland to the outback of Australia. (2013) Maryland Native Plant Society, Western Mountains Chapter. Frostburg, MD