SENAY YITBAREK, Ph.D.
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EDUCATION

Degrees and appointments:

2020 – present Carolina Postdoctoral Fellow for Faculty Diversity and USDA-NIFA Postdoctoral Fellow and. Department of Biology, University of North Carolina Chapel Hill

2017 – 2019 National Science Foundation Postdoctoral Fellowship in Biology
Department of Integrative Biology, University of California Berkeley
Advisor: Dr. Mike Boots

2016 Ph.D., Biology – Ecology and Evolutionary Biology, University of Michigan
Advisor: Dr. John H. Vandermeer

2011 M.S., Biology – Ecology and Evolutionary Biology, University of Michigan
Advisor: Dr. John H. Vandermeer

2008 B.A., Agricultural ecology, University of California Berkeley
Advisor: Dr. Stephen C. Welter

2005 A.A., Riverside Community College

Additional education:

2013 Ant course (California Academy of Sciences), Villa Carmen, Peru

2006 Agroecology Exchange Program, Federal University of Santa Catarina, Brazil

FUNDING

Honors and Awards:

2020 **USDA-NIFA Postdoctoral Fellowship** ($180,000)

2020 **Carolina Postdoctoral Fellowship for Faculty Diversity** ($100,000)

2017 **Postdoctoral Research Fellowship in Biology**, National Science Foundation ($207,000)

2016 **Rackham Dissertation Fellowship**, University of Michigan ($10,200)

2011 **Rackham Merit Fellowship**, University of Michigan ($63,252)

2007 **Stronach Post-Baccalaureate Prize**, University of California Berkeley ($25000)

2006 **US-Brazil** Agricultural Ecology Consortium Fellowship, USDA ($6000)

Grants:

2018-19 **Vector Behavior in Transmission Ecological Research Network, (**$5000)

2019 **Gordon Research Conference Carl Storm Fellowship (**$1000)

2016 **IDEAS Research Exchange**, Princeton University ($3000)

2015 **Invasion Ecology Research Exchange**, Colorado State University ($3000)

2013 **Rackham Graduate Student Research Grant**, University of Michigan ($3000)

2013 **Tinker Travel Grant**, University of Michigan ($1500)

2013 **Rackham International Research Award**, University of Michigan ($6000)

2011-15 **Rackham Summer Block Grant**, University of Michigan ($10,000)

2010 **Rackham Travel Grant**, University of Michigan ($1500)

2010 **Alliances for Graduate Education and the Professoriate Grant,**
University of Michigan ($2500)

2007 **Ronald E. McNair Scholarship Grant**, University of California Berkeley ($5000)

2006 **Latin American Studies Travel Grant**, University of California Berkeley ($15000)

2005 **Miller Scholarship Grant**, University of California Berkeley ($5000)

PUBLICATIONS

Yitbarek, S., Guittar J, Knutie SA, Ogbunugafor CB. 2020. Deconstructing higher-order interactions in the microbiota. *In revision, Journal of Animal Ecology* (preprint: doi.org/10.1101/647156)

Yitbarek, S., Philpott SP. 2019. Arboreal twig-nesting ants form dominance hierarchies over nesting resources. *Peer*J 7: e8124. doi.org/10.1101/442632

Yitbarek, S., Vandermeer, J.H. 2017. Reduction of species coexistence through mixing in a spatial competition model. *Theoretical Ecology*. 10: 443-450. doi.org/10.1007/s1208001703414

Yitbarek, S., Vandermeer, J.H., and Perfecto, I. 2017. From insinuator to dominator: a unique mechanism for an exotic ant. *Diversity and Distributions.* 23:820-827. doi.org/10.1111/ddi.12568

Vandermeer. J.* and **S. Yitbarek (*equal authorship**). 2012. Self-organized spatial pattern determines biodiversity in spatial competition. *J. Theor.Biol*. 300: 48-56. doi.org/10.1016/j.jtbi.201201005

Yitbarek, S., Vandermeer, J.H., and Allen, D. 2011. The combined effects of exogenous and endogenous variability on the spatial distribution of ant communities in a forested ecosystem. *Ecol. Entomol.* 40: 1067-1073. doi.org/10.1016/s00405809

Yitbarek, S. 2008**.** Reconsidering invasive grass and mowing impacts on native arthropod populations in a restored grassland, *Mcnair Research Journal* 15: 143-162.

Vandermeer, J.H, I Armbrecht, A de la Mora, KK Ennis, DJ Gonthier, Z Hajian-Forooshani, H-Y Hsieh, A Iverson, D Jackson, S Jha, E Jimenez-Soto, G Lopez-Bautista, A Larsen, K Li, H Liere, AJ MacDonald, L Marin, KA Mathis, I Monogan, J Morris, T Ong, GL Pardee, IS Rivera, K Williams-Guillen, **S Yitbarek**, S Uno, A Zemenick, SM Philpott, I Perfecto. 2019. The community ecology of herbivore regulation in an agroecosystem: Lessons from complex systems. *BioScience.* 69: 974-996.

Sealey, A.B., Beasley, E.D., Halsey, S.J., Schell, C.J., Leggett, Z.H., **Yitbarek, S.,** Harris, N.C. 2020. Human Dimensions: Raising Black Excellence by Elevating Black Ecologists Through Collaboration, Celebration, and Promotion. *Bull Ecol Soc Am*. 101(4): e01765

Berg, M., Goudeau, D., Olmsted, C., McMahon, K.D., Thweatt, J., Bryant, D., Eloe-Fadrosh, E.A., Malmstrom, R.R., **Yitbarek, S.,** Roux, S. 2020 (*accepted*). Host population diversity as a

driver of viral infection cycle in wild populations of green sulfur bacteria with long standing virus-host interactions. *ISME.*

Manuscripts under review (Pre-prints):

Yitbarek, S., Bailey, K., Tyler, S., Strickland, J., McCary, M., Harris, N. 2020. Inclusive sustainability approaches in common-pool resources from the perspective of black-"ologists".

Yitbarek, S., Vandermeer, J.H., I. Perfecto. 2019. Parasite mediated competition facilitates invasion. (preprint: doi.org/10.1101/16725)

Manuscripts in preparation:

Yitbarek, S., Morella, N., Koskella, B., Boots, M. Spatial competition between bacteriophages across different environments.

PRESENTATIONS

Invited seminars:

2020: Duke University, Durham (Zoom invited seminar)

2020: Stanford University, Palo Alto (Zoom invited seminar)

2020: University of North Carolina, Chapel Hill (Zoom invited seminar)

2020: San Francisco State University, San Francisco (Zoom invited seminar)

2019: The California Academy of Sciences, San Francisco

2019: Department of Botany, University of Wisconsin Madison

2019: Department of Ecology and Evolutionary Biology, Tulane University

2019: The Joint Berkeley Initiative for Microbiome Sciences, UC Berkeley

2019: Department of Entomology, UC Riverside

2014: The Arecibo Observatory, Puerto Rico

Contributed presentations:

Yitbarek, S. Effects of feeding behaviors and mortality on pathogen coinfection prevalence in vectors. VectorBite Annual Meeting, Trento, Italy. **August 2019**

Yitbarek, S. Spatial competition of bacteriophages across different environments. Ecology Society of America Annual Meeting, New Orleans, LA. **August 2018**

Yitbarek, S. The Shuri Effect: A new generation of black ecologists?
Ecology Society of America Annual Meeting, New Orleans, LA. **August 2018**

Yitbarek, S. Disease dynamics in invasive ants: The role of parasites in the global spread of the little fire ant *Wasmannia auropunctata.* Ecological Society of America Annual Meeting, Ft. Lauderdale, FL. **August 2016.**

Yitbarek, S. Reduction of species coexistence through mixing in a spatial competition model. Ecological Society of America Annual Meeting, Baltimore, MD. **August 2015.**

Yitbarek, S. Assembling Meta-Communities: Self-organized spatial mosaics maintain biodiversity. Summer Institute Symposium, Ann Arbor MI. **August 2011.**

Yitbarek, S. Ants in Space: Competitive intransitivity promotes mosaic pattern formation. EEB Theoretical Ecology Seminar, Ann Arbor, MI. **September 2010**

Yitbarek, S. Aquatic Subsidies Along a Sand Dune Ecosystem. University of Michigan Biological Station, Ann Arbor, MI. **August 2008**

Poster presentations:

Yitbarek, S. Spatial structure as a mechanism for pathogen diversity. Ecology and Evolution of Infectious Disease, Princeton, NJ. **August 2019**

Yitbarek, S. Parasite mediated competition facilitates ant invasions. Ecology and Evolution of Infectious Disease, Santa Barbara, CA. **August 2017.**

Yitbarek, S. The combined effects of exogenous and endogenous variability on the spatial distribution of ant communities in a forested ecosystem. Ecological Society of America Annual Meeting, Pittsburgh, PI. **August 2010.**

TEACHING

Instructor of Record:

2020 San Francisco State University, ***Introduction to Programming for Biologists***

Guest Lecturer:

2020 University of Pennsylvania, ***Ecology***

2018 University of California Santa Cruz, ***Tropical Agroecosystems***

2015 University of Michigan Ann Arbor, ***Life decoded: Genomics in Society***

2014 University of Michigan Ann Arbor, ***Deep Time: The Science of Origins***

Teaching Assistant:

2015 University of Michigan Ann Arbor, ***Life decoded: Genomics in Society***

2014 University of Michigan Ann Arbor, ***Deep Time: The Science of Origins***

2013 University of Michigan Ann Arbor, ***Introductory Biology Lab***

2011 University of Michigan Ann Arbor**, *Biology for Non-Science Majors***

2010 University of Michigan Ann Arbor, ***Ecology and Evolution of Infectious Diseases***

MENTORING

Students mentored:

2017-19 **University of California, Berkeley.**

- Tanya Kumar (Honors thesis, 2018)
- Nicole DeNamur (Honors thesis, 2019)
- Alyssa Chang (2019)
- Stacy Ahn (2019)

2011-14 **University of Michigan, Ann Arbor**.

- Colleen Smith (Honors thesis, 2011)
- Raymond Balaquer (NSF REU, 2012)
- Areliz Rivera (NSF REU 2014)
- Lena Cruz (2013)

SCIENCE OUTREACH AND SERVICE

2018 **Member**, **Committee Diversity and Education, Ecological Society of America**
Developing a Strategic Plan and educational programming related to raising public awareness and understanding of ecology.

2017 **Panelist, Ecological Society of America Annual Meeting, New Orleans, Strategies for Ecology, Education, Diversity, and Sustainability Minority Ecologists Forum**
As a panel member, representing the Black Ecologists Chapter in the Ecological Society of America (ESA), I shared my experiences on my career path as a minority scientist. In collaboration with partner sections, I developed ideas to increase and strengthen diversity within ESA as a society.

2016-present **Founding member and Current Chair, Black Ecologists Section**
Serving the professional, social, and cultural interests of black ecologists.

2015-16 **Volunteer, Bio-blitz at D-Town Farm in Detroit, Michigan**
Conducted biological surveys on a 5-acre organic farm owned by the Detroit Black Farmers to help guide small groups of African-American students in identifying variety of species present on the farm.

2009-10 **Ambassador, National Center for Institutional Diversity**
Talked to undergraduates at Penn State University (PA) and Eastern Michigan University (MI) about applying to and thriving in graduate school.

2008-12 **Diversity Recruitment Partnership, University of Michigan**
I advised and mentored undergraduate students from Historically Black Colleges including Howard university, Morehouse College, Tuskegee university, and the University of Missouri at St. Louis about graduate school opportunities. I helped students design field projects and analyze their data at the E.S. George Reserve.

PROFESSIONAL SERVICE AND MEMBERSHIP

Committee work:

2016 **Early Career Scientist Symposium Scientific Committee, University of Michigan**
Graduate student representative of early career scientific committee on the topic of eco-evolutionary community assembly processes. Assisted in nominating and selecting symposium speakers, programming symposium, and facilitating discussion among panel and audience members.

2011 **Graduate Student Representative, EEB Diversity Committee**
Helped write NSF-funded summer research program (ED-QUE^{2}ST) for first and second-year college students from backgrounds under-represented in ecology and evolutionary biology.

Reviewer:
Journal of Animal Ecology, Ecology, PLOS ONE, PLOS Computational Biology, Oikos, ISME

Society membership:
Ecological Society of America, The Society for the Study of Evolution

SYMPOSIA ORGANIZED

2018 **"Averting the Tragedy of the Commons: Critical feedbacks across scales from Microbes to Humans",** Ecological Society of America Annual Meeting, New Orleans

2018 **"Evolutionary Epidemiology Across Multiple Scales",** Joint Congress on Evolutionary Biology, Montpellier.

WORKSHOP PARTICIPATION

2019 **Vector Behavior in Transmission Ecology,** Trento, Italy.

2018 **Next Prof Science: Future Faculty Workshop,** Ann Arbor, Michigan.

2017 **Vector Behavior in Transmission Ecology,** Imperial College in London, UK.

2017 **Infectious Disease Evolution Across Scales**, New Orleans, Louisiana.

2014 **Animal Social Networks NIMBios**, Knoxville, Tennessee.

MISCELLANEOUS

Languages: Tigrinya (Fluent), Dutch (Fluent), English (Fluent), German (Proficient), Spanish (Proficient), Portuguese (Proficient).