

Nathan I. Wisnoski

Department of Biological Sciences, Mississippi State University
nathan.wisnoski@msstate.edu ♦ www.nathanwisnoski.com

EDUCATION

Indiana University, Bloomington Ph.D in Biology – Evolution, Ecology, and Behavior Minor in Environmental Studies, O’Neill School of Public and Environmental Affairs	2014 – 2020
The University of Texas at Austin B.S. in Biology – Ecology, Evolution, and Behavior Minor in Business, McCombs School of Business	2009 – 2013

EXPERIENCE

Assistant Professor Mississippi State University, Department of Biological Sciences	August 2022 – Present <i>Starkville, MS</i>
Postdoctoral Researcher University of Wyoming	July 2020 – August 2022 <i>Laramie, WY</i>
Graduate Research & Teaching Assistant Indiana University	August 2014 – May 2020 <i>Bloomington, IN</i>
Lab & Field Technician University of Texas	Spring 2014 <i>Austin, TX</i>

PUBLICATIONS

Preprints, In Review, and In Prep:

4. **Wisnoski, N.I.** In review. Spatial microbial flows: hidden fluxes of detritus, diversity, and function in meta-ecosystems. Preprint on EcoEvoRxiv: <https://doi.org/10.32942/X2BW46>
3. **Wisnoski, N.I.**, M.C. Szojka, R.M. Germain, T. Fukami, and L.G. Shoemaker. In review. Dispersal kernels regulate environmental, biotic, and stochastic effects on the maintenance of metacommunity diversity. Preprint on bioRxiv: <https://doi.org/10.1101/2025.08.12.669961>
2. Leibold, M.A., M. Barbier, L.S. Bittleston, A.T. Clark, C. Cuellar-Gempeler, R. D’Andrea, V.F. Frans, G. Khattar, Z. Miller, P. Peres-Neto, **N.I. Wisnoski**. In review. Linking pattern to process in metacommunities: challenges and opportunities. Preprint on EcoEvoRxiv: <https://doi.org/10.32942/X2504P>
1. **Wisnoski, N.I.** In review. Microbial biodiversity in river networks. Book chapter. In ”Aquatic Biodiversity: Theories, Approaches, and Future Directions”.

Published:

18. Davidson, J.L., K.R. McKnight, M. Szojka, D. Gannon, **N.I. Wisnoski**, C.M. Werner, M. Liang, E.W. Seabloom, C. Ray, M.H. DeSiervo, and L.G. Shoemaker. 2025. Effects of disturbance and fertilization on plant community synchrony, biodiversity, and stability through succession. *Ecology Letters* 28(4):e70052.

17. Von Eggers, J.M., **N.I. Wisnoski**, J.W. Calder, E. Capo, D.V. Groff, A.C. Krist, and B. Shuman. 2024. Environmental filtering governs consistent vertical zonation in sedimentary microbial communities across disconnected mountain lakes. *Environmental Microbiology* 26(3):e16607.
16. **Wisnoski, N.I.**, R. Andrade, M.C.N. Castorani, C.P. Catano, A. Compagnoni, T. Lamy, N.K. Lany, L. Marazzi, S. Record, A.C. Smith, C.M. Swan, J.D. Tonkin, N.M. Voelker, P.L. Zarnetske, and E.R. Sokol. 2023. Diversity-stability relationships become decoupled across spatial scales: a synthesis of organism and ecosystem types. *Ecology* 104(9):e4136.
15. **Wisnoski, N.I.** and J.T. Lennon. 2023. Scaling up and down: movement ecology for microorganisms. *Trends in Microbiology* 31(3):242-253.
14. Mobilian, C., **N.I. Wisnoski**, J.T. Lennon, M. Alber, S. Widney, C.B. Craft. 2023. Differential effects of press vs. pulse seawater intrusion on microbial communities of a tidal freshwater marsh. *Limnology and Oceanography Letters* 8(1):151-161.
13. **Wisnoski, N.I.** and L.G. Shoemaker. 2022. Seed banks alter metacommunity diversity: the interactive effects of competition, dispersal, and dormancy. *Ecology Letters* 25(4):740-753.
12. Lamy, T., **N.I. Wisnoski**, R. Andrade, M.C.N. Castorani, A. Compagnoni, N. Lany, L. Marazzi, S. Record, C.M. Swan, J.D. Tonkin, N. Voelker, S. Wang, P.L. Zarnetske, and E.R. Sokol. 2021. The dual nature of metacommunity variability. *Oikos* 130(12):2078-2092. *Editor's Choice*.
11. **Wisnoski, N.I.** and J.T. Lennon. 2021. Stabilizing role of seed banks and the maintenance of bacterial diversity. *Ecology Letters* 24(11):2328-2338.
10. Shoemaker, L.G., J.A. Walter, L.A. Gherardi, M.H. DeSiervo, and **N.I. Wisnoski**. 2021 Writing mathematical ecology: a guide for authors and readers. *Ecosphere* 12(8):e03701.
9. Graham, E.B., C. Averill, B. Bond-Lamberty, J.E. Knelman, S. Krause, A.L. Peralta, A. Shade, A.P. Smith, S. Cheng, N. Fanin, C. Freund, P.E. Garcia, S.M. Gibbons, M.W. Van Goethem, M.B. Guebila, J. Kumpinen, R. Nowicki, J.G. Pausas, S. Reed, J. Rocca, A. Sengupta, D. Sihi, M. Simonin, M. Słowiński, S. Spawn, I. Sutherland, J. Tonkin, **N.I. Wisnoski**, S.C. Zipper, and Contributor Consortium. 2021. Toward a unifying framework of disturbance ecology through crowdsourced science. *Frontiers in Ecology and Evolution* 9:76.
8. Record, S., N.M. Voelker, P.L. Zarnetske, **N.I. Wisnoski**, J.D. Tonkin, C.M. Swan, L. Marazzi, N. Lany, T. Lamy, A. Compagnoni, M.C.N. Castorani, R. Andrade, and E.R. Sokol. 2021. Novel insights to be gained from applying metacommunity theory to long-term, spatially replicated biodiversity data. *Frontiers in Ecology and Evolution* 8:479.
7. **Wisnoski, N.I.** and J.T. Lennon. 2021. Microbial community assembly in a multi-layer dendritic metacommunity. *Oecologia* 195:13-24. *Highlighted Student Research*.
6. **Wisnoski, N.I.**, M.E. Muscarella, M.L. Larsen, A.L. Peralta, and J.T. Lennon. 2020. Metabolic insight into bacterial community assembly across ecosystem boundaries. *Ecology* 101(4):e02968.
5. Mueller, E.A., **N.I. Wisnoski**, A.L. Peralta, and J.T. Lennon. 2020. Microbial rescue effects: how microbiomes can save hosts from extinction. *Functional Ecology* 30(10):2055-2064.
4. Ward, A.S., S.M. Wondzell, N.M. Schmadel, S. Herzog, J.P. Zarnetske, V. Baranov, P.J. Blaen, N. Brekenfeld, R. Chu, R. Derelle, J. Drummond, J.H. Fleckenstein, V. Garayburu-Caruso, E. Graham, D. Hannah, C.J. Harman, J. Hixson, J.L.A. Knapp, S. Krause, M.J. Kurz, J. Lewandowski, A. Li, E. Marti, M. Miller, A.M. Milner, K. Neil, L. Orsini, A.I. Packman, S. Plont, L. Renteria, K. Roche, T. Royer, C. Segura, J.

- Stegen, J. Toyoda, J. Wells, and **N.I. Wisnoski**. 2019. Spatial and temporal variation in river corridor exchange across a 5th-order mountain stream network. *Hydrology and Earth System Sciences* 23:5199-5225.
3. Ward, A.S., M.J. Kurz, N.M. Schmadel, J.L.A. Knapp, P.J. Blaen, C.J. Harman, J.D. Drummond, D.M. Hannah, S. Krause, A. Li, E. Marti, A. Milner, M. Miller, K. Neil, S. Plont, A.I. Packman, **N.I. Wisnoski**, S.M. Wondzell, and J.P. Zarnetske. 2019. Solute transport and transformation in an intermittent, headwater mountain stream with diurnal discharge fluctuations. *Water* 11(11):2208.
 2. Ward, A.S., J.P. Zarnetske, V. Baranov, P.J. Blaen, N. Brekenfeld, R. Chu, R. Derelle, J. Drummond, J.H. Fleckenstein, V. Garayburu-Caruso, E. Graham, D. Hannah, C.J. Harman, S. Herzog, J. Hixson, J.L.A. Knapp, S. Krause, M.J. Kurz, J. Lewandowski, A. Li, E. Marti, M. Miller, A.M. Milner, K. Neil, L. Orsini, A.I. Packman, S. Plont, L. Renteria, K. Roche, T. Royer, N.M. Schmadel, C. Segura, J. Stegen, J. Toyoda, J. Wells, **N.I. Wisnoski**, and S.M. Wondzell. 2019. Co-located contemporaneous mapping of morphological, hydrological, chemical, and biological conditions in a 5th-order mountain stream network, Oregon, USA. *Earth System Science Data* 11:1567-1581.
 1. **Wisnoski, N.I.**, M.A. Leibold, and J.T. Lennon. 2019. Dormancy in metacommunities. *The American Naturalist* 194(2):135-151.

Book Reviews:

1. **Wisnoski, N.I.** and J.T. Lennon. 2016. "Principles of Microbial Diversity" by James W. Brown. *The Quarterly Review of Biology* 91(1): 98-99.

GRANTS

2023–2025	\$614,757	Mississippi Based RESTORE Act Center of Excellence (MBRACE). <i>Transport and fate of bacterial communities in Mississippi coastal ecosystems</i> . PI: N.I. Wisnoski .
2021–2022	\$65,888	Wyoming EPSCoR: Microbial Ecology Collaborative. <i>Microbial community assembly in dendritic networks: disentangling the roles of local environmental heterogeneity, stochasticity, and dispersal</i> . PIs: N.I. Wisnoski and S.E. Albeke.
2016–2018	\$76,000	NSF LTER Network Communications Office (NCEAS). <i>A synthesis to identify how metacommunity dynamics mediate community responses to disturbance across the ecosystems represented in the LTER network</i> . PI: E.R. Sokol, Co-PIs: C.M. Swan, N.I. Wisnoski .
2015	\$5,400	Indiana University. Sustainability Research Development Grant.

FELLOWSHIPS AND AWARDS

Downer Undergraduate Research Award, First Place Mentor Award.	2024
Louise Constable Hoover Fellowship, IU Biology. \$2000	2019
Travel Award, Association for the Sciences of Limnology and Oceanography. \$606	2018
Travel Award, ESA Microbial Ecology Section. \$600	2017
George W. Brackenridge Fellowship, IU Biology. \$2000	2016
Travel Award, International Society for Microbial Ecology. €300	2016
Travel Award, Honorable Mention, ESA Microbial Ecology Section. \$150	2016

INVITED PRESENTATIONS

- 2024 Invited speaker, American Society of Microbiology Tennessee-Kentucky and South-Central Joint Branch Meeting, Memphis, TN
- 2024 Invited speaker, “Organized Oral Session: Linking pattern to process in (meta)community assembly”, Ecological Society of America, Long Beach, CA
- 2023 Invited speaker, “Workshop: Critical phenomena and challenges emerging from dormancy”, Goethe Universität, Frankfurt, Germany
- 2022 Seminar, Swiss Federal Institute of Aquatic Science and Technology (Eawag), Department of Aquatic Ecology
- 2022 Seminar, Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology & Plant Pathology
- 2022 Invited speaker, “Workshop: Impacts of dormancy and latency on host-parasite dynamics”, Universität Bonn, Hausdorff Research Institute for Mathematics (HIM), Bonn, Germany
- 2021 Seminar, Mississippi State University, Department of Biological Sciences
- 2020 Seminar, University of Wyoming, Department of Botany

CONTRIBUTED PRESENTATIONS

*Note: * = Presenter*

- Sharna, S.N.* , D.J. Wise, M.J. Griffin, and **Wisnoski, N.I.**. 2025. *Vaccination effects on microbiome assembly in channel catfish and pond environments*. American Society of Microbiology - South Central Branch Annual Meeting. Starkville, MS.
- Patalinghug, J.M.R.* and **Wisnoski, N.I.**. 2025. *Microbial ecology of mangroves: a metacommunity perspective*. American Society of Microbiology - South Central Branch Annual Meeting. Starkville, MS.
- Patalinghug, J.M.R.* and **Wisnoski, N.I.**. 2025. *Microbial ecology of mangroves: a metacommunity perspective*. Florida Coastal Everglades LTER All Scientists’ Meeting. Miami, FL.
- Wisnoski, N.I.*** . 2025. *Dispersal-dormancy covariation and the maintenance of biodiversity*. Ecological Society of America. Baltimore, MD.
- Singh, T.* and **N.I. Wisnoski**. 2024. *The fate of terrestrial-derived bacteria in aquatic ecosystems (poster)*. Ecological Society of America. Long Beach, CA.
- Wisnoski, N.I.*** and J.T. Lennon. 2023. *Microbial movement ecology: linking motility and dispersal across scales*. American Society for Microbiology: Microbe. Houston, TX [Canceled due to illness].
- Wisnoski, N.I.*** and L.G. Shoemaker. 2022. *Seed banks in metacommunities: when and how do they maintain biodiversity?* Ecological Society of America Annual Meeting. Montreal, QC, Canada [Canceled due to illness].
- Davidson, J.L.* , K. McKnight, M.H. DeSiervo, C.M. Werner, M.C. Szojka, **N.I. Wisnoski**, E.W. Seabloom, L.G. Shoemaker. 2022. *Community synchrony, stability, and biodiversity responses to global change: evaluating*

- short-term versus multi-decadal responses*. Ecological Society of America Annual Meeting. Montreal, QC, Canada.
- von Eggers, J.*, D. Groff, **N. Wisnoski**, J. Calder, A. Krist, B. Shuman. 2022. *Controls on biogeography and assembly of lake sedimentary microbial communities*. Joint Aquatic Sciences Meeting. Grand Rapids, MI.
- Wisnoski, N.I.***, M.E. Muscarella, M.L. Larsen, A.L. Peralta, and J.T. Lennon. 2021. *Metabolic insight into bacterial community assembly across ecosystem boundaries*. Ecological Society of America Annual Meeting. Long Beach, CA (Virtual).
- Wisnoski, N.I.** and E.R. Sokol*. 2021. *Diversity-stability relationships across spatial scales: aggregate and compositional variability correlate with different dimensions of metacommunity diversity*. Ecological Society of America Annual Meeting. Long Beach, CA (Virtual).
- Wisnoski, N.I.***, E.R. Sokol, R. Andrade, M.C.N. Castorani, C.P. Catano, A. Compagnoni, T. Lamy, N.K. Lany, L. Marazzi, S. Record, A.C. Smith, C.M. Swan, J.D. Tonkin, N.M. Voelker, P.L. Zarnetske. 2019. *Patterns and drivers of stability in long-term metacommunity data*. Ecological Society of America Annual Meeting. Louisville, KY.
- Sokol, E.R.*, **N.I. Wisnoski**, and C.M. Swan. 2019. *Insights from the synthesis of long-term biodiversity data: resources and tools available to community ecologists*. Ecological Society of America Annual Meeting. Louisville, KY.
- Wisnoski, N.I.***, M.A. Leibold, J.T. Lennon. 2019. *Dormancy in metacommunities: when can temporal dispersal maintain diversity in variable landscapes?* Society for Freshwater Science Annual Meeting. Salt Lake City, UT.
- Ward, A. S.*, C.J. Harman, N.M. Schmadel, M.J. Kurz, P. Blaen, S.M. Wondzell, J.D. Drummond, D.M. Hannah, J.L. Knapp, S. Krause, A. Li, E.R. Martí, M. Miller, A. Milner, K. Neil, S. Plont, K.R. Roche, A.I. Packman, **N. Wisnoski**, J.P. Zarnetske. 2018. *How do evapotranspiration-driven discharge fluctuations alter reach-scale ecosystem function?* American Geophysical Union, Fall Meeting. Washington, D.C..
- Ward, A. S.*, S. Herzog, S.M. Wondzell, N.M. Schmadel, P. Blaen, J.D. Drummond, D.M. Hannah, C.J. Harman, J.L. Knapp, S. Krause, M.J. Kurz, A. Li, E. Martí, M. Miller, A. Milner, K. Neil, S. Plont, K.R. Roche, A.I. Packman, **N. Wisnoski**, and J.P. Zarnetske. 2018. *Spatial and temporal relationships between hydrologic forcing, geologic setting, and river corridor exchange in a mountain stream network*. American Geophysical Union, Fall Meeting. Washington, D.C..
- Ward, A.S.*, S. Herzog, S.M. Wondzell, N. Schmadel, P. Blaen, J. Drummond, D.M. Hannah, C.J. Harman, J. Knapp, S. Krause, M.J. Kurz, A. Li, E. Marti, M. Miller, A. Milner, K. Neil, S. Plont, K. Roche, A.I. Packman, **N. Wisnoski**, and J. Zarnetske. 2018. *How do hydrologic forcing and geologic setting control river corridor exchange in a 5th order mountain stream network?* Geological Society of America Annual Meeting. Indianapolis, IN.
- Wisnoski, N.I.*** and J.T. Lennon. 2018. *Contribution of “seed banks” to bacterioplankton community dynamics*. Society for Freshwater Science Annual Meeting. Detroit, MI.
- Sokol, E.R.*, **N.I. Wisnoski**, and C.M. Swan. 2018. *Using long-term data to understand when metacommunities respond to disturbance*. Ecological Society of America Annual Meeting. New Orleans, LA.
- Wisnoski, N.I.***, M.E. Muscarella, and J.T. Lennon. 2018. *Dispersal and dormancy across ecosystem boundaries*. Association for the Sciences of Limnology and Oceanography. Victoria, BC, Canada.

- Wisnoski, N.I.*** and J.T. Lennon. 2017. *Microbial community assembly in dendritic metacommunities*. Ecological Society of America Annual Meeting. Portland, OR.
- Sokol, E.R.*, **N.I. Wisnoski**, C.M. Swan, R. Andrade, H.L. Bateman, A.G. Hope, J. Kominoski, N.K. Lany, L. Marazzi, S.J. Presley, A. Rassweiler, S. Record, M.R. Willig, and P.L. Zarnetske. 2017. *The role of long-term ecological research programs for testing metacommunity theory and understanding biodiversity patterns*. Ecological Society of America Annual Meeting. Portland, OR.
- Voelker, N.M.*, E.R. Sokol, **N.I. Wisnoski**, C.M. Swan, T. Lamy, M.C.N. Castorani, L. Marazzi, A. Compagnoni, J.R. Blanchard, R. Andrade, and N.K. Lany. 2017. *Evaluating the link between metacommunity stability and environmental variability across trophic groups represented at LTER sites*. Ecological Society of America Annual Meeting. Portland, OR.
- Wisnoski, N.I.*** and J.T. Lennon. 2016. *Community assembly processes differ between surface water and sediment-associated communities in stream networks*. Ecological Society of America Annual Meeting. Fort Lauderdale, FL.
- Wisnoski, N.I.*** and J.T. Lennon. 2016. *Local and regional processes in stream microbial community assembly (poster)*. International Symposium on Microbial Ecology (ISME 16). Montreal, QC, Canada.
- Wisnoski, N.I.***, A.S. Ward, and J.T. Lennon. 2015. *Bacterial metacommunity structure across a stream network (poster)*. LTER All Scientists Meeting. Estes Park, CO.

WORKSHOPS AND SYMPOSIA

- | | |
|-----------|--|
| 2025 | Invited participant, “MSU Aquatic Antimicrobial Resistance Workshop”, FARO Reference Center on AMR and Aquaculture Biosecurity, Starkville, MS |
| 2025 | Co-organizer, “Organized Oral Session: Evolutionary ecology of dormancy in communities” Ecological Society of America, Baltimore, MD |
| 2025 | Invited participant and microbial lead, “River Corridor Critical Zone RCN Workshop”, HJ Andrews Experimental Forest LTER, Oregon |
| 2022 | Invited working group participant, “Workshop: Merging Statistical Theory and Analyses at the Interface of Microbial and ‘Macrobial’ Ecology”, Montreal, QC, Canada |
| 2018 | Lead organizer, “Synthesizing long-term community data: questions, challenges, and advances”, LTER All Scientists Meeting. Pacific Grove, CA |
| 2016–2023 | Co-organizer, “LTER metacommunities working group”, NSF LTER Network Communications Office, NCEAS, Santa Barbara, CA |

TEACHING

- Instructor.** BIO 4993/6993: Community Ecology. *Mississippi State University*. Fall 2023, Fall 2024.
- Instructor.** BIO 3104: Ecology. *Mississippi State University*. Spring 2023, Spring 2024, Spring 2025.
- Co-Instructor.** BIOL-Z 620: Quantitative Biodiversity. *Indiana University*. Spring 2017.
- Associate Instructor.** BIOL-L 111: Foundations of Biology: Diversity, Evolution, and Ecology. *Indiana University*. Spring 2016, Fall 2016, Spring 2018, Spring 2019, Spring 2020.
- Associate Instructor.** BIOL-L 113: Biology Laboratory. *Indiana University*. Fall 2014, Fall 2017, Fall 2018, Fall 2019.

Grader. BIO 364: Microbial Ecology. *University of Texas*. Spring 2014.

Teaching Assistant. SSC 328M: Biostatistics. *University of Texas*. Spring 2013, Fall 2013.

ADVISING

Mississippi State University (2022-present)

- Postdocs: Durga Purushotham Mahesh Chinthalapudi
- Ph.D. Students: Jenny Marie Patalinghug, Sadia Nusrat Sharna
- Undergraduates: Tajinder Singh, Portia Mobley
- Graduate Committees: Tristan Henderson, Garrett Timmons, Taylor Bishop, Shamim Ahmed, Pranoti Giram, Caleb Perniciaro, Paul Perez

Indiana University (2014-2020)

- Undergraduates: Luke Pryke, Mollie Carrison
- Summer REUs: Jaylen Beatty, Mary Wallace, SydneyEllen Gooding
- High School: Dakayla Calhoun, Samuel Iwu, Ian Schowe

SERVICE

Grant Review Panels:

2025 Swiss National Science Foundation

2022 Long-Term Ecological Research (LTER) Network: Synthesis Working Groups

Grant Reviewer, ad hoc:

- *National Science Foundation (NSF)*: Division of Environmental Biology (2020, 2022).
- *Swiss National Science Foundation*: 2024

Peer Reviewer, ad hoc:

- *Journals*: American Naturalist, Applied and Environmental Microbiology, Aquatic Ecology, Austral Ecology, Biogeosciences, Biology Letters, BioScience, Current Biology, Ecography, Ecological Applications, Ecological Indicators, Ecology, Ecology Letters, Ecosystem Health and Sustainability, Environmental Microbiology, FEMS Microbial Ecology, Freshwater Science, Global Ecology and Biogeography, The ISME Journal, Journal of Biogeography, Journal of Ecology, Microbial Ecology, mSystems, New Phytologist, Oikos, Philosophical Transactions of the Royal Society B, PNAS Nexus, Proceedings of the National Academy of Sciences, Scientific Reports.
- *Books*: Kirchman (2018) Processes in Microbial Ecology (2nd Ed.)
- *Theses*: University of Oulu (Ph.D., 2023)

Professional Societies:

- 2025 Assistant host committee member, ASM-South Central Branch Meeting, Starkville, MS
2017 Moderator, Organized Oral Session: *Advancing ecological theory through synthesis of long-term ecological research*, Ecological Society of America, Portland, OR

University, College, Department:

- 2025–2026 Faculty Search Committee, Biology Dept. Mississippi State University
2025–2026 Biology Seminar Coordinator, Biology Dept. Mississippi State University
2024– Graduate Committee, Biology Dept. Mississippi State University
2023–2024 Faculty Search Committee, Biology Dept. Mississippi State University
2022– Zernickow Award Committee, Biology Dept. Mississippi State University
2014–2020 Graduate Recruiting Weekend, Biology Dept. Indiana University
2015–2016 EcoLunch Co-Organizer, Indiana University
2015 Organizer, Metacommunity Reading Group, Indiana University

Community Outreach:

- 2017–2019 Coordinator, High School Riverwatch Sampling

ACADEMIC ADVISORS

Jay Lennon, Indiana University (Ph.D.)
Lauren Shoemaker, University of Wyoming (Postdoc)
Shannon Albeke, University of Wyoming (Postdoc)

Date updated: 21st October, 2025