

# NATHAN I. WISNOSKI

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## EDUCATION

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

## EXPERIENCE

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

## PUBLICATIONS

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*In review, in revision, and/or preprints:*

**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. Diversity-stability relationships become decoupled across spatial scales: a synthesis of organism and ecosystem types. Submitted, preprint available on bioRxiv.

*Peer-reviewed publications:*

**Wisnoski, N.I.** and J.T. Lennon. Accepted. Scaling up and down: movement ecology for microorganisms.

**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.

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.

**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.

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.

- 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. Kemppinen, 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.
- 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.
- Wisnoski, N.I.** and J.T. Lennon. 2021. Microbial community assembly in a multi-layer dendritic metacommunity. *Oecologia* 195:13-24.
- Mobilian, C., **N.I. Wisnoski**, J.T. Lennon, M. Alber, S. Widney, C.B. Craft. 2020. Differential effects of press vs. pulse seawater intrusion on microbial communities of a tidal freshwater marsh. *Limnology and Oceanography Letters*.
- 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.
- 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.
- 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.
- 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.
- 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.
- Wisnoski, N.I.**, M.A. Leibold, and J.T. Lennon. 2019. Dormancy in metacommunities. *The American Naturalist* 194(2):135-151.

#### *Book Reviews:*

- 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

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**Wyoming EPSCoR: Microbial Ecology Collaborative.** *Microbial community assembly in dendritic networks: disentangling the roles of local environmental heterogeneity, stochasticity, and dispersal.* PIs: **N.I. Wisnoski** and S.E. Albeke. \$65,888.40. 2021–2022.

**NSF LTER Network Communications Office (NCEAS).** *A synthesis to identify how metacommunity dynamics mediate community responses to disturbance across the ecosystems represented in the LTER network.* PI: E.R. Sokol, co-PIs: C.M. Swan, **N.I. Wisnoski**. \$76,000. 2016–2018

**Indiana University.** Sustainability Research Development Grant. \$5,400. 2015

## FELLOWSHIPS AND AWARDS

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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
Departmental Research Recruitment Fellowship, IU Biology.	2014

## INVITED SEMINARS

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Swiss Federal Institute of Aquatic Science and Technology, Dept. of Aquatic Ecology	2022
Mississippi State University, Dept. of Biochemistry, Molecular Biology, Entomology & Plant Pathology	2022
University of Bonn, Hausdorff Research Institute for Mathematics	2022
Mississippi State University, Dept. of Biological Sciences	2021
University of Wyoming, Dept. of Botany	2020

## CONFERENCE TALKS AND POSTERS

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*Note: \* = Presenter*

**Wisnoski, N.I.\*** and L.G. Shoemaker. 2022. *Seed banks in metacommunities: when and how do they maintain biodiversity? [Withdrawn due to illness.]* Ecological Society of America Annual Meeting. Montreal, QC, Canada.

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.

## TEACHING

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**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.

## WORKSHOPS

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**Participant.** 2022. NSF Workshop on Merging Statistical Theory and Analyses at the Interface of Microbial and ‘Macrobial’ Ecology. Organizers: M. Leibold, P. Peres-Neto, E. Thebault. Montreal, QC, Canada.

**Participant.** 2022. Impacts of dormancy and latency on host-parasite dynamics. Hausdorff Research Institute for Mathematics. Organizer: C. Pokalyuk. Bonn, Germany.

**Lead Organizer.** 2018. Synthesizing long-term community data: questions, challenges, and advances. LTER All Scientists Meeting. Pacific Grove, CA.

## MENTORSHIP AND SERVICE

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### Ad Hoc Grant Reviewer:

- *National Science Foundation (NSF)*: Division of Environmental Biology.

### Peer Reviewer:

- *Journals*: American Naturalist, Applied and Environmental Microbiology, Aquatic Ecology, Austral Ecology, Biogeosciences, BioScience, Ecography, Ecological Indicators, Ecology, Ecology Letters, Environmental Microbiology, FEMS Microbial Ecology, Freshwater Science, Global Ecology and Biogeography, The ISME Journal, Journal of Biogeography, Journal of Ecology, Microbial Ecology, mSystems, and New Phytologist.

- *Books*: Kirchman (2018) Processes in Microbial Ecology (2nd Ed.)

#### **STEM Mentorship:**

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

#### **Outreach:**

- Coordinator, High School Riverwatch Sampling Summer 2017 – 2019

#### **Moderating and Discussion Activities:**

- Moderator, Organized Oral Session: *Advancing Ecological Theory through Synthesis of Long-Term Ecological Research*, ESA, Portland, OR. 2017
- EcoLunch Co-Organizer, Indiana University August 2015 – May 2016
- Organizer, Metacommunity Reading Group, Indiana University Summer 2015

#### **Departmental Service:**

- Prospective Student Host, Graduate Recruiting Weekend, Biology Dept. Indiana University 2014 – 2020

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#### ACADEMIC ADVISORS

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

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#### PROFESSIONAL SOCIETY MEMBERSHIP

Ecological Society of America  
 Society for Freshwater Sciences  
 American Society of Naturalists