

Ravi Ranjan

Appointments

- August 2024– **Research fellow**, *Department of Integrative Biology, University of Texas, Austin, USA*.
Postdoctoral advisor: Caroline Farrior
- 2022–2025 **Associate Junior Fellow**, *Hanse-Wissenschaftskolleg Institute for Advanced Study, Delmenhorst, Germany*.
- 2021–2024 **Postdoctoral researcher**, *HIFMB Integrative Postdoc Pool, Helmholtz Institute for Functional Marine Biodiversity (HIFMB), Oldenburg, Germany*.
Postdoctoral advisors: Bernd Blasius, Helmut Hillebrand and Mridul Thomas

Education

- 2021 **PhD**, *Department of Plant Biology and Program in Ecology, Evolutionary Biology and Behavior, Michigan State University*.
Graduate Committee: Christopher Klausmeier, Elena Litchman, Spencer Hall and Orlando Sarnelle
- 2014 **M.Sc. Biological Sciences and B.E. Manufacturing Engineering**, *Birla Institute of Technology and Science (BITS), Pilani, India*.

Publications

- 2026 **Ranjan R**, Ryabov A, Halsey K, Hillebrand H, Thomas MK, Blasius B. A growth-maintenance tradeoff determines nutrient-limited growth in phytoplankton. *bioRxiv*. <https://doi.org/10.64898/2026.06.01.729340>. *under review at Limnology and Oceanography*.
- 2026 **Ranjan R***, Thomas M*. Improving the efficiency of single-driver ecological experiments with Bayesian optimal experimental design. *bioRxiv*. <https://doi.org/10.64898/2026.05.28.728579>. *to be submitted to Methods in Ecology and Evolution*.
*Both authors contributed equally.
- 2024 **Ranjan R**, Koffel T, Klausmeier C. The three species problem: incorporating competitive asymmetry and intransitivity in modern coexistence theory. *Ecology Letters* 27.4 (2024): e14426
- 2024 Thomas M*, **Ranjan R***. Designing more informative multiple driver experiments. *Annual Review of Marine Sciences* 16 (2023): 513–536.
*Both authors contributed equally.
- 2022 Wierenga J, Thomas M, **Ranjan R**, Ibelings B. Complex effects of chytrids on Planktothrix growth across interacting temperature and light gradients. *ISME Communications* 2, 93 (2022). <https://doi.org/10.1038/s43705-022-00178-5>
- 2022 **Ranjan R**, Klausmeier C. How the resource supply distribution structures competitive communities. *Journal of Theoretical Biology* 538 (2022) 111054.

- 2016 **Ranjan R**, Bagchi S. Functional response and body size in consumer-resource interactions: uni-modality favors facilitation. *Theoretical Population Biology* (110) 2016:25-35.
- in prep* **Ranjan R**, Koffel T, Klausmeier C. Multi-species coexistence along nutrient gradients. In prep for *The American Naturalist*. Draft available on request.

--- Fellowships/Awards (total of ~ €290,000)

- 2022 **Associate Junior Fellowship (Postdoc Program)**, Hanse-Wissenschaftskolleg Institute of Advanced Study, Delmenhorst, Germany (~ €10,000) .
- 2020 **HIFMB Integrative Postdoc Pool Fellowship**, Helmholtz Institute for Functional Marine Biodiversity (HIFMB), Oldenburg, Germany (~ €200,000) .
- 2020 **MSUSciComm Blog Writing Contest**, Michigan State University (MSU) .
- 2020 **College of Natural Sciences Dissertation Completion Fellowship**, Michigan State University (MSU) (\$8000).
- 2018-19 **Summer Fellowship**, Kellogg Biological Station, Michigan State University (\$7000).
- 2015- **Ecology, Evolutionary Biology and Behavior Travel Award**, MSU (~ \$2,000).
- 2015- **Paul Taylor Award**, Department of Plant Biology, Michigan State University (~ \$5,000).
- 2015-2020 **BEACON Center for the Study of Evolution in Action Top-up Fellowship**, Michigan State University (\$20,000).
- 2015-2016 **College of Natural Sciences Recruiting Fellowship**, MSU (\$54,500).
- 2014 **National Network for Mathematical and Computational Biology Internship, Science and Engineering Research Board**, Government of India (₹45,000).

--- Teaching experience and training

- Summer 2026 **Ecological Theory for Everyone: A practical introduction to engaging with theory in your own research for those with little or no theoretical experience.** Co-instructor.
Workshop at the Annual Meeting of the Ecological Society of America, Salt Lake City, Utah, USA 2026.
Instructors: Caroline Farrior, **Ravi Ranjan**, Robin Decker, Sun-Yi Soh
- Spring 2026 **Teaching Preparation Series certificate.** Awarded by the Center for Teaching and Learning, University of Texas at Austin, Texas, USA.
- Summer 2019 **Enhancing Linkages between Mathematics and Ecology** - Teaching Fellow
Graduate (MS/PhD) course at Kellogg Biological Station, Michigan State University, United States
Week 1: **Theoretical Population and Community Ecology**
Instructor: Thomas Koffel, Kellogg Biological Station, Michigan State University
Week 2: **Introduction to Meta-Analysis in Ecology**
Instructor: Craig Osenberg, University of Georgia
- Summer 2018 **Enhancing Linkages between Mathematics and Ecology**- Teaching Fellow
Graduate (MS/PhD) course at Kellogg Biological Station, Michigan State University, United States of America
Week 1: **Introduction to Theoretical Ecology: Populations and Species Interactions**
Instructor: Chad Brasil, School of Biological Sciences, University of Nebraska-Lincoln
Week 2: **Bayesian Models in Ecology**

Instructor: Inez Ibanez, School for Environment and Sustainability, University of Michigan
Week 3: **Structured demographic models for population, community, and evolutionary ecology**

Instructor: Thomas (TEX) Miller, Biosciences, Rice University

Spring 2014 **Theoretical and Mathematical Ecology** - Teaching Assistant

Graduate course at Centre for Ecological Sciences, Indian Institute of Science, Bengaluru

Instructor: Vishwesh Guttal

Mentoring Experience

- March 2025- **Shaheer Siddiqui**, undergraduate student at University of Texas at Austin
June 2023- **Lisa Morales**, co-mentor of PhD at University of Geneva, Phytoplankton-chytrid dynamics
May 2022 - **Simon Stühler**, Masters' thesis at University of Oldenburg, Understanding temperature dependence of algal photosynthesis and respiration
March 2023
March-May 2022 **Simon Stühler**, undergraduate student at University of Oldenburg, Understanding temperature dependence of algal photosynthesis and respiration

Invited Lectures/Workshops

- September 2025 **Ranjan R**, Thomas M. How to Design Better Experiments? Global Lake Ecological Observatory Network (GLEON) Limnoserries.
February 2025 **Ranjan R**. Unpacking complex communities in a changing world: insights from ecological theory. Department of Biological Sciences, University of Texas at El Paso, El Paso, Texas, USA
September 2023 **Ranjan R**. Designing better experiments in global change biology. Hanse-Wissenschaftskolleg Institute for Advanced Study, Delmenhorst, Germany
August 2023 **Ranjan R**. Complex communities in a changing world: the role of species-environment interactions. Center for Computational and Theoretical Biology, University of Würzburg, Germany
September 2022 **Ranjan R**. Temperature-resource interactions: causes and consequences. Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan.
October 2020 **Ranjan R**. Models in ecology and evolution: an introduction. Birla Institute of Technology and Science, Pilani, India.

Select Presentations

- July 2026 **Ranjan R**, Farrior C. Senescence of large trees explains the higher-than-expected frequency of intermediate-sized trees in temperate forests. Annual meeting of Ecological Society of America, Salt Lake City, Utah, USA.
July 2025 **Ranjan R**, Ryabov A, Thomas M, Hillebrand H, Halsey K, Blasius B. How do phytoplankton allocate photosynthetic C in different nutrient environments? Contributed talk at workshop on Why are cells the size they are? Buxted Park, East Sussex, UK.
October 2024 **Ranjan R**, Thomas M. Designing better experiments in ecology: insights from optimal design theory. Ecolunch seminar, Department of Integrative Biology at University of Texas at Austin.

- December 2021 **Ranjan R**, Ryabov A, Hillebrand H, Blasius, B. Temperature-resource interactions: causes and consequences. Seminar, Helmholtz Institute of Functional Marine Biodiversity (HIFMB), Oldenburg, Germany.
- January 2020 **Ranjan R**, Koffel T, Klausmeier CA. Coexistence in complex communities: some insights from a three species competition model. Stand Alone Meeting of the American Society of Naturalists, Asilomar, CA, USA
- Feb 2019 **Ranjan R**, Koffel T, Klausmeier CA. How do communities coexist: lessons from some simple models. Program in Ecology, Evolutionary Biology and Behavior (EEBB) Student Colloquium, Michigan State University, East Lansing.
- Feb 2019 **Ranjan R**, Koffel T, Klausmeier CA. Keystone predation meets resource ratio theory: community assembly and coexistence in a freshwater food web module. Brown Bag Symposium, W.K. Kellogg Biological Station, Michigan State University
- August 2018 **Ranjan R**, Koffel T, Klausmeier CA. Species turnover along resource gradients in phytoplankton communities, Ecological Society of America Meeting, New Orleans, LA, USA.
- August 2017 **Ranjan R**, Klausmeier CA. How do resource spectrum and use determine the structure of competitive communities? Ecological Society of America Meeting, Portland, OR, USA.
- May 2017 **Ranjan R**, Klausmeier CA. How do resource spectrum and use determine the structure of competitive communities? Program in Ecology, Evolutionary Biology, and Behavior (EEBB) Research Symposium, Michigan State University, East Lansing
- March 2017 **Ranjan R**, Klausmeier CA. How do resource spectrum and use determine the structure of competitive communities? Midwest Ecology and Evolution Conference (MEEC), University of Illinois, Urbana-Champaign, IL, USA.

Outreach

- March 2024 Designing better experiments in global change ecology. HIFMB newsletter, published by the Helmholtz Institute of Functional Biodiversity (HIFMB), Oldenburg, Germany.
- April 2022 The HIFMB podcast: On Competition, Coexistence and Cold Winters. Hosted by the Helmholtz Institute of Functional Biodiversity (HIFMB), Oldenburg, Germany.
- 2020 Ranjan R. Math in the age of COVID-19: the what and the why of mathematical modeling. MSU SciComm Voices Blog.
- 2013 Understanding natural selection. An exhibit at Open Day, Indian Institute of Science, Bangalore, India.

Professional Development

- Nov 2019 Implicit Bias Training, Kellogg Biological Station, Michigan State University
- January 2019 Cultural Competency Seminar, Kellogg Biological Station, Michigan State University
- Nov 2018 Workshop on increasing diversity in STEM graduate programs, Kellogg Biological Station, Michigan State University
- 2015-16 Responsible Conduct of Research Workshops, Michigan State University

Service

- 2022-2025 Member, Diversity Committee, American Society of Naturalists.
- 2022-2024 Position of Trust, Helmholtz Institute of Functional Marine Biodiversity (HIFMB), Oldenburg, Germany.

- 2022 Seminar coordinator, Helmholtz Institute of Functional Marine Biodiversity (HIFMB), Oldenburg, Germany.
- 2017-2019 Social media co-chair, Ecology, Evolutionary Biology and Behavior Program (EEBB), Michigan State University, East Lansing, USA.
- 2018 Member, Organizing Committee, Midwest Ecology and Evolution Conference (MEEC) 2018, W.K. Kellogg Biological Station, Michigan State University, Hickory Corners, Michigan, USA.
- 2018 Co-chair, EEBB Research Symposium Organizing Committee, Michigan State University, East Lansing, USA.
- 2016-2018 Graduate student representative, Seminar Committee, Department of Plant Biology, Michigan State University, East Lansing, USA.

Peer Review

- Journals Oikos, Ecology Letters, Journal of Animal Ecology, Global Ecology and Biogeography, Functional Ecology, PLOS Computational Biology, Plankton and Benthos Research
- Grants Rules of Life, National Science Foundation, USA