

Elena Litchman

W.K. Kellogg Biological Station and Department of Integrative Biology
Ecology, Evolutionary Biology and Behavior Graduate Program
Michigan State University
Hickory Corners, MI 49060
E-mail: litchman@msu.edu
Phone: (269) 671-2338, Fax: (269) 671-2104

Research Interests

Community and ecosystem ecology, microbial ecology, global change, trait-based approaches, limnology and oceanography, experimental evolution, phytoplankton ecology, physiology and evolution.

Education

- 1997 Ph.D. in Ecology, University of Minnesota
Dissertation: *Competition and coexistence of phytoplankton under fluctuating light*
Advisors: Robert W. Sterner and David Tilman
- 1990 Honors Diploma in Biology (Ecology and Hydrobiology), Moscow State University, Russia

Positions Held

- 2016-present MSU Foundation Professor, Kellogg Biological Station and Department of Integrative Biology (IBIO), Michigan State University
- 2019 Sabbatical fellow, Centre for Functional and Evolutionary Ecology (CEFE), CNRS and Eco&Sol, INRA, Montpellier, France and iDiv, Leipzig, Germany
- 2015-2016 Professor, KBS and IBIO, MSU
- 2006-present Adjunct Assistant, Associate and Full Professor, Plant Biology Department, MSU
- 2010-2015 Associate Professor, Kellogg Biological Station and Zoology Department, MSU
- 2011-2012 Sabbatical Visiting Scientist, Section of Ocean Ecology and Climate, Danish Technical University (DTU), Denmark
- 2005–2010 Assistant Professor, Michigan State University, W.K. Kellogg Biological Station and Zoology Department
- 2003–2005 Research Scientist II (equivalent to non tenure-track assistant professor), School of Biology, Georgia Institute of Technology, GA
- 2001–2002 Postdoctoral Associate, Institute of Marine and Coastal Sciences, Rutgers University, NJ (with Paul G. Falkowski and Oscar M. Schofield)
- 2000–2001 Postdoctoral Researcher, Limnological Research Centre, Swiss Federal Institute for Environmental Science and Technology, Switzerland (with Peter Bossard)
- 1998–2000 Smithsonian Institution Postdoctoral Fellow, Smithsonian Environmental Research Center, MD (with Patrick J. Neale)
- 1995 Visiting Research Fellow, Swiss Federal Institute for Environmental Science and Technology, Switzerland (with Claudia Pahl-Wostl)
- 1992–1993, 1997 Research Assistant, Limnological Research Center, University of Minnesota (with Joe Shapiro and Amy Leventer)

Awards and Honors

- 2021 G. Evelyn Hutchinson Award, Association for the Sciences of Limnology and Oceanography (ASLO)
- 2017 Petersen Foundation Excellence Professorship Award, Helmholtz Center for Ocean Research (IFM-GEOMAR), Germany
- 2016 Michigan State University Foundation Professorship
- 2010 Presidential Early Career Award for Scientists and Engineers (PECASE)
- 2009 NSF CAREER Award
- 2009 Editor's citation, Outstanding Reviewer for *Limnology and Oceanography*
- 2005 President's Undergraduate Research Faculty Mentor Award, Georgia Tech
- 1998–2000 Smithsonian Institution Postdoctoral Fellowship
- 1997 Outstanding Teaching Assistant Award, College of Biological Sciences, University of Minnesota
- 1995–1996 Summer Fellowship, Department of Ecology, Evolution and Behavior, University of Minnesota
- 1995 NSF Doctoral Dissertation Improvement Grant (DDIG) Award
- 1995–1997 University of Minnesota Travel Awards
- 1995 Summer Fellowship, Swiss Federal Institute for Environmental Science and Technology (EAWAG)
- 1988–1990 Academician Ovchinnikov Fellowship, Moscow State University, Russia

External Funding

- 2018-2021 NASA Planetary Science Division (Astrobiology: Exobiology Program): *Modeling the evolutionary emergence of diverse microbial metabolisms* (\$360K). **Lead PI**, with C. Klausmeier (MSU) and G. Grimaud (U Corsica, France)
- 2018-2021 NSF (DEB Population and Community Ecology): *Collaborative Research: Intraspecific trait variation in phytoplankton at different scales* (\$993K, MSU part \$543K). **Lead PI**, with C. Klausmeier (MSU) and E. Theriot (UT Austin)
- 2016-2020 NSF (Dimensions of Biodiversity): *Collaborative Research: Genetic, functional and phylogenetic diversity determines marine phytoplankton community responses to changing temperature and nutrients* (\$2M, MSU part \$640,989). **Lead PI**, with C. Klausmeier (MSU), D. Hutchins (U Southern California) and T. Rynearson (U Rhode Island)
- 2016-2017 National Institute for Mathematical and Biological Synthesis (NIMBioS) Investigative Workshop: *Ecology meets systems biology: developing a pan-microbial trait-based framework for community ecology and ecosystem functioning*, **Lead PI**, with C. Hawkes (UT Austin) and C. Klausmeier (MSU)
- 2015-2018 Simons Foundation (Targeted Grants in the Mathematical Modeling of Living Systems): *Microscopic foundations for macroecological patterns* (\$599,583), co-PI with C. Klausmeier (PI)
- 2015-2017 Defense Advanced Research Projects Agency (DARPA) Biological Robustness in Complex Systems (BRICS): *Trait-based Models for Complex Microbial Communities* (\$801,210), co-PI with C. Klausmeier (PI)
- 2014 National Evolutionary Synthesis Center (NESCent) Catalysis Meeting on *Evolution*

and Community Ecology of Host-Associated Microbiota, **lead PI**, with T. Schmidt (U Michigan)

- 2013-2016 NSF (Cyber-enabled sustainability science and engineering [CyberSEES]): *Towards sustainable aquatic ecosystems: a new adaptive sampling and data-enabled monitoring and modeling framework* (\$800,000), co-PI with X. Tan (PI), P. Mantha, H. Radha, G. Xing (MSU)
- 2011-2016 NSF (Dimensions of Biodiversity): Collaborative Research: *Lake Baikal responses to global change: the role of genetic, functional and taxonomic diversity in the plankton* (\$2M, MSU part \$599,941), **lead PI**, with C. Klausmeier (MSU), S. Hampton (UCSB), M. Moore (Wellesley), E. Theriot (UT Austin) and L. Yampolsky (ETSU)
- 2011-2016 NSF (Chemical, Bioengineering, Environmental and Transport Systems: Energy for Sustainability): *Experimental and theoretical trait-based approaches to optimizing algal biofuel polycultures* (\$328,537), **lead PI**, with C. Klausmeier
- 2009-2015 NSF (Bio Oceanography): *Phytoplankton Traits, Functional Groups and Community Organization: A Synthesis* (\$544,871), **lead PI**, with C. Klausmeier, REU supplement 2010 (\$10,070)
- 2009-2014 NSF (Information & Intelligent Systems): *AquaSWARM: Small Wireless Autonomous Robots for Monitoring of Aquatic Environments* (\$409,999), co-PI with X. Tan
- 2009-2015 NSF CAREER (Ecology): *Mechanisms of Phytoplankton Community Reorganization Under Global Change* (\$529,626), **sole PI**
- 2005-2010 James S. McDonnell Foundation (Studying Complex Systems): *Plankton Community Assembly: Theory and Practice* (\$449,965 direct costs), co-investigator with C.A. Klausmeier (PI)
- 2005-2008 NSF (Ecology): *Vertical Distribution of Phytoplankton* (\$350,000), **lead PI**, with C.A. Klausmeier. REU supplement (\$8,850).
- 2005-2008 NSF (Ecology): *QEIB: Novel Approaches to Plankton Seasonal Succession* (\$350,000), co-PI with C.A. Klausmeier (PI) and L. Bunimovich. REU supplement (\$8,850)
- 1998–2001 Swiss National Science Foundation (SNF): *Effects of Dynamic Light and Phosphorus Supplies on Phytoplankton* (\$150,000), with C. Pahl-Wostl and P. Bossard
- 1995–1997 National Science Foundation Doctoral Dissertation Improvement Grant (\$5,500) with D. Tilman
- 1994 Sigma Xi Grants-in-Aid of Research Grant

Internal Funding

- 2014 BEACON NSF Center for Evolution in Action (MSU): *Cold specialists in Siberia: Sequencing evolutionary adaptations in microorganisms endemic to the planet's oldest lake Baikal* (\$22,116), PI with T. Teal
- 2011-2014 BEACON NSF Center for Evolution in Action (MSU): *Rapid evolutionary responses of marine phytoplankton to rising temperatures* (\$102,468), **lead PI**, with C. Klausmeier and E.V. Armbrust (U Washington)

- 2008-2010 Biogeochemistry Environmental Research Initiative (BERI), MSU grant *Development of an autonomous robotic fish-based sensor to detect Harmful Algal Blooms (HABs)* (\$10,000 direct costs), PI, with Dr. X. Tan (MSU College of Engineering)
- 2007-2009 MSU Center for Water Sciences grant *Interactive effects of turbulence, light and phosphorus on Microcystis blooms in Michigan lakes* (\$145,336 direct costs), **lead PI**, with Drs. P. Mantha, O. Sarnelle and S. Hamilton
- 2006-2007 MSU Center for Water Sciences venture grant *Physical-biological coupling in the pelagic: the role of dynamic physical processes in structuring phytoplankton communities* (\$10,200 direct costs), **lead PI**, with Dr. P. Mantha (College of Engineering)
- 1994 James W. Wilkie Research Grant, University of Minnesota

Peer-reviewed Articles (* denotes supervised students and postdocs)

- 2021 Wollrab S*, L Izmet'eva, SE Hampton, EA Silow, **E Litchman** and CA Klausmeier. 2021. Climate change-driven regime shifts in a planktonic food web. *American Naturalist*. doi.org/10.1086/712813.
- Guittar J*, T Koffel*, A Shade, CA Klausmeier and **E Litchman**. 2021. Resource competition and host feedbacks underlie regime shifts in gut microbiota. *American Naturalist*. doi.org/10.1086/714527.
- Erdoğan Ş*, M Beklioğlu, **E Litchman**, ET Miller, EE Levi, T Bucak and UN Tavşanoğlu. Determinants of phytoplankton size structure in warm, shallow lakes. *Journal of Plankton Research*. In press.
- Ryabov A, O Kerimoglu, **E Litchman**, I Olenina, L Roselli, A Basset, E Stanca and B Blasius. 2021. Shape matters: the relationship between cell geometry and diversity in phytoplankton. *Ecology Letters*. doi.org/10.1111/ele.13680.
- Westoby M, DA Nielsen, MR Gillings, **E Litchman**, JS Madin, IT Paulsen and SG Tetu. 2021. Cell size, genome size and maximum growth rate are near-independent dimensions of ecological variation across bacteria and archaea. *Ecology and Evolution* 11: 3956–3976.
- 2020 Van De Waal D and **E Litchman**. 2020. Multiple global change stressor effects on phytoplankton nutrient acquisition in a future ocean. *Phil. Trans. R. Soc. B*. 275: 20190706.
- Aranguren-Gassis M* and **E Litchman**. 2020. Thermal performance of marine diatoms under contrasting nitrate availability. *Journal of Plankton Research* 42: 680-688.
- Klausmeier CA, MM Osmond, CT Kremer* and **E Litchman**. 2020. Ecological limits to evolutionary rescue. *Phil. Trans. R. Soc. B* 375: 20190453.
- Madin JS et al. 2020. A synthesis of bacterial and archaeal phenotypic trait data. *Nature Scientific Data*, 7: 1-8.
- 2019 Aranguren-Gassis M*, CT Kremer*, CA Klausmeier and **E Litchman**. 2019. Nitrogen limitation inhibits marine diatom adaptation to high temperatures. *Ecology Letters* 22: 1860-1869.
- Stockenreiter M* and **E Litchman**. 2019. Nitrogen-fixer enhances lipid overyielding in algal polycultures. *Algal Research*, doi: 10.1016/j.algal.2019.101676.
- Guittar J*, A Shade and **E Litchman**. 2019. Trait-based succession and community assembly of the infant gut microbiome. *Nature Communications* 10: 512.

- O'Donnell DR*, Z Du and **E Litchman**. 2019. Experimental evolution of phytoplankton fatty acid thermal reaction norms. *Evolutionary Applications* 12: 1201-1211.
- 2018 O'Donnell DR*, E Johnson*, C Hamman*, CT Kremer*, CA Klausmeier and **E Litchman**. 2018. Rapid thermal adaptation in a marine diatom reveals constraints and trade-offs. *Global Change Biology* 24: 4554-4565.
- Edwards KF*, CT Kremer*, ET Miller*, MM Osmond, **E Litchman** and CA Klausmeier. 2018. Evolutionarily stable communities: a framework for understanding the role of trait evolution in the maintenance of diversity. *Ecology Letters* 21: 1853-1868.
- Nalley JO*, DR O'Donnell* and **E Litchman**. 2018. Temperature effects on growth rates and fatty acid content in freshwater microalgae and cyanobacteria. *Algal Research* 35: 500-507.
- 2017 Thomas MK*, M Aranguren-Gassis*, CT Kremer*, MR Gould*, K Anderson*, CA Klausmeier and **E Litchman**. 2017. Temperature-nutrient interactions exacerbate sensitivity to warming in phytoplankton. *Global Change Biology* 23: 3269–3280.
- Safaie A, **E Litchman** and M.S. Phanikumar. 2017. Evaluating the role of groundwater in circulation and thermal structure of a deep inland lake. *Advances in Water Resources* 108: 310-327.
- Ryan C*, MK Thomas* and **E Litchman**. 2017. The effects of phosphorus and temperature on the competitive success of an invasive cyanobacterium. *Aquatic Ecology* 51:463-472.
- Meunier CL, M Boersma, R El-Sabaawi, H Halvorson, EM Herstoff, DB Van de Waal, RJ Vogt and **E Litchman**. 2017. From elements to function: toward unifying ecological stoichiometry and trait-based ecology. *Frontiers in Environmental Science*. doi: 10.3389/fenvs.2017.00018.
- O'Donnell DR*, P Wilburn*, E Silow, LY Yampolsky and **E Litchman**. 2017. Nitrogen and phosphorus co-limitation of phytoplankton in Lake Baikal, Siberia: insights from the lake survey and nutrient enrichment experiments. *Limnology and Oceanography* 62: 1383–1392.
- Kremer CT*, MK Thomas* and **E Litchman**. 2017. Scaling of phytoplankton growth rate with temperature and size: reconciling the Eppley curve and metabolic theory of ecology framework. *Limnology and Oceanography* 62: 1658-1670.
- Roselli L*, **E Litchman**, E Stanca, F Cozzoli and A Basset. 2017. Individual trait variation in phytoplankton communities across multiple spatial scales. *Journal of Plankton Research* 39: 577-588.
- 2016 Yema L, **E Litchman** and P De Tezanos Pinto. 2016. The role of heterocytes in the physiology and ecology of bloom-forming harmful cyanobacteria. *Harmful Algae* 60: 131-138.
- Edwards KF*, MK Thomas*, CA Klausmeier and **E Litchman**. 2016. Phytoplankton growth and the interaction of light and temperature: a synthesis at the species and community level. *Limnology and Oceanography* 61: 1232–1244.
- Zhang F, O Ennasr, **E Litchman** and X Tan. 2016. Autonomous sampling of water columns using gliding robotic fish: algorithms and harmful algae sampling experiments. *IEEE Systems Journal* 10: 1271-1281.
- Lewandowska A and 33 others. 2016. The influence of balanced and imbalanced resource supply on biodiversity-functioning relationship across ecosystems. *Philosophical Transactions of the Royal Society B* 371.

- Thomas MK*, CT Kremer* and **E Litchman**. 2016. Environment and evolutionary history determine the global biogeography of phytoplankton temperature traits. *Global Ecology and Biogeography* 25: 75-86.
- Bonachela JA, CA Klausmeier, KF Edwards, **E Litchman** and SA Levin. 2016. The role of phytoplankton diversity in the emergent oceanic stoichiometry. *Journal of Plankton Research* doi: 10.1093/plankt/fbv087.
- Thomas MK* and **E Litchman**. 2016. Interactive effects of temperature, nitrogen availability and toxicity on the growth of invasive and native cyanobacteria. *Hydrobiologia* 763: 357-369.
- 2015 **Litchman E**, P de Tezanos Pinto*, KF Edwards*, CT Kremer*, CA Klausmeier, MK Thomas*. 2015. Global biogeochemical impacts of phytoplankton: a trait-based perspective. *Journal of Ecology* 103: 1384-1396.
- Litchman E**, KF Edwards* and CA Klausmeier. 2015. Microbial resource utilization traits and trade-offs: implications for community structure, functioning and biogeochemical impacts at present and in the future. *Frontiers in Microbiology* 6: 254. doi: 10.3389/fmicb.2015.00254.
- Edwards, KF*, CA Klausmeier and **E Litchman**. 2015. Nutrient utilization traits in phytoplankton. Data paper. *Ecology* 96: 2311.
- Zhang F, O Ennasr, **E Litchman** and X Tan. 2015. Autonomous sampling of water columns using gliding robotic fish: Control algorithms and field experiments. *Proceedings of 2015 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 517-522.
- Edwards KF*, MK Thomas*, CA Klausmeier and **E Litchman**. 2015. Light and growth in marine phytoplankton: allometric, taxonomic, and environmental variation. *Limnology and Oceanography* 60: 540-552.
- 2014 Nalley JO*, M Stockenreiter* and **E Litchman**. 2014. Community ecology of algal biofuels: complementarity and trait-based approaches. *Industrial Biotechnology* 10: 191-201.
- Zhang F, J Wang, J Thon, C Thon, **E Litchman** and X Tan. 2014. Gliding robotic fish for mobile sampling of aquatic environments. Invited. *IEEE 11th Conference Proceedings on Networking, Sensing, and Control*: 167-172.
- 2013 Kreft J-U, CM Plugge, V Grimm, C Prats, JHJ Leveau, T Banitz, S Baines, J Clark, A Ros, I Klapper, CJ Topping, AJ Field, A Schuler, **E Litchman**, FL Hellweger. 2013. Mighty small: observing and modeling individual microbes becomes big science. *PNAS* 110: 18027–18028.
- Shurin JB, RL Abbott, MS Deal, G Kwan, **E Litchman**, R McBride, S Mandal and VH Smith. 2013. Industrial-strength ecology: Tradeoffs and opportunities in algal biofuel production. *Ecology Letters* 16: 1393-1404.
- Edwards KF*, CA Klausmeier and **E Litchman**. 2013. A three-way tradeoff maintains functional diversity under variable resource supply. *American Naturalist* 182: 786-800. Highlighted in *Faculty of 1000*.
- Edwards KF*, **E Litchman** and CA Klausmeier. 2013. Functional traits predict variation in phytoplankton community structure across lakes of the United States. *Ecology* 94: 1626–1635.

Boyd PW, TA Ryneerson, EA Armstrong, F-X Fu, K Hayashi, Z Hu, DA Hutchins, RM Kudela, **E Litchman**, MR Mulholland, U Passow, RF Strzepek, KA Whittaker, E Yu and MK Thomas*. Marine phytoplankton temperature versus growth responses from polar to tropical waters - outcome of a scientific community-wide study. *PLoS ONE* 8 (5): e63091.

Litchman E, MD Ohman and T Kiørboe. 2013. Trait-based approaches to zooplankton communities. *Journal of Plankton Research*. Horizons paper. 35: 473-484.

Barton AD, AJ Pershing, **E Litchman**, NR Record, KF Edwards*, ZV Finkel, T Kiørboe and BA Ward. 2013. The biogeography of marine plankton traits. *Ecology Letters* 16: 522-534.

Edwards KF*, **E Litchman** and CA Klausmeier. 2013. Functional traits explain phytoplankton community structure and seasonal dynamics in a marine ecosystem. *Ecology Letters* 16: 56-63.

2012 **Litchman E**, KF Edwards*, CA Klausmeier and MK Thomas*. 2012. Phytoplankton niches, traits and eco-evolutionary responses to global environmental change. Theme section on *Biological responses in an anthropogenically modified ocean*. *Marine Ecology Progress Series* 470: 235-248.

Thomas MK*, CT Kremer*, CA Klausmeier and **E Litchman**. 2012. A global pattern of thermal adaptation in marine phytoplankton. *Science* 338: 1085-1088. Highlighted in *Nature*, *New Scientist*, *Faculty of 1000* and many other outlets.

Edwards KF*, MK Thomas*, CA Klausmeier and **E Litchman**. 2012. Allometric scaling and taxonomic variation in nutrient utilization traits and growth rates of marine and freshwater phytoplankton. *Limnology and Oceanography* 57: 554-566.

Klausmeier CA and **E Litchman**. 2012. Successional dynamics in the seasonally forced diamond food web. *American Naturalist* 180: 1-16.

Steiner CF*, CA Klausmeier and **E Litchman**. 2012. Transient dynamics and the destabilizing effects of weak trophic interactions in aquatic food webs. *Ecology* 93: 632-644. Highlighted in *Faculty of 1000*.

Mellard JP*, K Yoshiyama*, CA Klausmeier and **E Litchman**. 2012. Experimental test of the phytoplankton competition for light and nutrient in poorly mixed water columns. *Ecological Monographs* 82: 239-256.

2011 Stomp M*, J Huisman, GG Mittelbach, **E Litchman** and CA Klausmeier. 2011. Large scale biodiversity gradients in freshwater phytoplankton. *Ecology* 92: 2096-2107. Highlighted in *Science* and *Faculty of 1000*.

Edwards KF*, CA Klausmeier and **E Litchman**. 2011. Evidence for a three-way tradeoff between nitrogen and phosphorus competitive abilities and cell size in phytoplankton. *Ecology* 92: 2085-2095. Highlighted in *Faculty of 1000*.

Izmet'eva LR, EA Silow and **E Litchman**. 2011. Long-term dynamics of the Lake Baikal pelagic phytoplankton under climate change. *Inland Water Biology* 4: 301-307.

Schwaderer AS*, K Yoshiyama*, P de Tezanos Pinto*, NG Swenson, CA Klausmeier and **E Litchman**. 2011. Eco-evolutionary differences in light utilization traits and distributions of freshwater phytoplankton. *Limnology and Oceanography* 56: 589-598. Highlighted in *Faculty of 1000*.

Mellard JP*, K Yoshiyama*, **E Litchman** and CA Klausmeier. 2011. The vertical distribution of phytoplankton in stratified water columns. *Journal of Theoretical Biology* 269: 16-30.

- 2010 **Litchman E** 2010. Invisible invaders: non-pathogenic invasive microbes in aquatic and terrestrial ecosystems. *Ecology Letters* 13: 1560-1572.
- Litchman E**, P de Tezanos Pinto*, CA Klausmeier, MK Thomas* and K Yoshiyama*. 2010. Linking traits to species diversity and community structure in phytoplankton. *Invited review. Hydrobiologia* 653: 15-38.
- De Tezanos Pinto P* and **E Litchman**. 2010. Interactive effects of N:P ratios and light on nitrogen-fixer abundance. *Oikos* 119: 567-575.
- De Tezanos Pinto P* and **E Litchman**. 2010. Eco-physiological responses of nitrogen-fixing cyanobacteria to light. *Hydrobiologia* 639: 63-68.
- 2009 MacKay MD, PJ Neale, CD Arp, LN De Senerpont Domis, X Fang, G Gal, KD Jöhnk, G Kirillin, JD Lenters, **E Litchman**, S MacIntyre, P Marsh, J Melack, WM Mooij, F Peeters, A Quesada, SG Schladow, M Schmid, C Spence and SL Stokes. 2009. Modeling lakes and reservoirs in the climate system. *Limnology and Oceanography* 54: 2315-2329.
- Steiner* CF, AS Schwaderer*, V Huber*, CA Klausmeier and **E Litchman**. 2009. Periodically forced food chain dynamics: model predictions and experimental validation. *Ecology* 90: 3099–3107.
- Yoshiyama K*, JP Mellard*, **E Litchman** and CA Klausmeier. 2009. Phytoplankton competition for nutrients and light in a stratified water column. *American Naturalist* 174: 190-203.
- Litchman E**, CA Klausmeier and K Yoshiyama*. 2009. Contrasting size evolution in marine and freshwater diatoms. *Proceedings of the National Academy of Sciences USA* 106: 2665-2670.
- 2008 **Litchman E** and BLV Nguyen*. 2008. Alkaline phosphatase activity as a function of internal phosphorus concentration in freshwater phytoplankton. *Journal of Phycology* 44:1379-1383.
- Litchman E** and CA Klausmeier. 2008. Trait-based community ecology of phytoplankton. *Annual Review of Ecology, Evolution and Systematics* 39: 615-639.
- Klausmeier CA, **E Litchman**, T Daufresne and SA Levin. 2008. Phytoplankton stoichiometry. *Ecological Research* 23: 479-485.
- 2007 Klausmeier CA, **E Litchman** and SA Levin. 2007. A model of flexible uptake of two essential resources. *Journal of Theoretical Biology* 246: 278-289.
- Litchman E**, CA Klausmeier, OM Schofield and PG Falkowski. 2007. The role of functional traits and trade-offs in structuring phytoplankton communities: scaling from cellular to ecosystem level. *Ecology Letters* 10: 1170-1181. Featured in *Faculty of 1000*.
- 2006 **Litchman E**, CA Klausmeier, JR Miller, OM Schofield and PG Falkowski. 2006. Multi-nutrient, multi-group model of present and future oceanic phytoplankton communities. *Biogeosciences* 3: 585-606.
- 2005 **Litchman E** and PJ Neale. 2005. UV effects on photosynthesis, growth and acclimation of an estuarine diatom and cryptomonad. *Marine Ecology Progress Series* 300: 53-62.
- Kay AD, IW Ashton, E Gorokhova, AJ Kerkhoff, A Liess and **E Litchman**. 2005. Toward a stoichiometric framework for evolutionary biology. *Oikos* 109: 6-17.

- 2004 **Litchman E**, CA Klausmeier and P Bossard. 2004. Phytoplankton nutrient competition under dynamic light regimes. *Limnology and Oceanography* 49: 1457-1462.
- Klausmeier CA, **Litchman E**, Daufresne T, Levin SA. 2004. Optimal N:P stoichiometry of phytoplankton. *Nature* 429: 171-174.
- Klausmeier CA, **E Litchman** and SA Levin. 2004. Phytoplankton growth and stoichiometry under multiple nutrient limitation. *Limnology and Oceanography* 49: 1463-1470.
- 2003 **Litchman E**. 2003. Competition and coexistence of phytoplankton under fluctuating light: experiments with two cyanobacteria. *Aquatic Microbial Ecology* 31: 241-248.
- Litchman E**, D Steiner and P Bossard. 2003. Photosynthetic and growth responses of three freshwater algae to phosphorus limitation and daylength. *Freshwater Biology* 48: 2141-2148.
- 2002 **Litchman E**, PJ Neale and AT Banaszak. 2002. Increased sensitivity to ultraviolet radiation in nitrogen-limited dinoflagellates: photoprotection and repair. *Limnology and Oceanography* 47: 86-94.
- 2001 Klausmeier CA and **E Litchman**. 2001. Algal games: the vertical distribution of phytoplankton in poorly mixed water columns. *Limnology and Oceanography* 46: 1998-2007.
- Callieri C, G Morabito, Y Huot, PJ Neale and **E Litchman**. 2001. Photosynthetic response of pico- and nanoplanktonic algae to UVB, UVA and PAR in a high mountain lake. *Aquatic Sciences* 63: 286-293.
- Neale PJ, **E Litchman**, C Sobrino, C Callieri, G Morabito, V Montecino, Y Huot, P Bossard, C Lehmann and D Steiner. 2001. Quantifying the response of phytoplankton photosynthesis to ultraviolet radiation: biological weighting functions versus *in situ* measurements in two Swiss lakes. *Aquatic Sciences* 63: 265-285.
- Köhler J, M Schmitt, H Krumbek, M Kapfer, **E Litchman** and PJ Neale. 2001. Effects of UV on carbon assimilation of phytoplankton in a mixed water column. *Aquatic Sciences* 63: 294-309.
- Litchman E** and CA Klausmeier. 2001. Competition of phytoplankton under fluctuating light. *American Naturalist* 157: 170-187.
- 2000 **Litchman E** 2000. Growth rates of phytoplankton under fluctuating light. *Freshwater Biology* 44: 223-235.
- 1998 **Litchman E** 1998. Population and community responses of phytoplankton to fluctuating light. *Oecologia* 117: 247-257.
- 1992 Levich AP and **E Litchman** (EG Lichman). 1992. A model-based investigation of possibilities for the directed change in the structure of phytoplankton communities. *J. General Biology*, 53: 689-703. (In Russian with English abstract).

Book Chapters (*denotes supervised students and postdocs)

- 2014 Edwards KF* and **E Litchman**. Phytoplankton communities. In *Marine Community Ecology and Conservation*, edited by M. Bertness, J. Bruno, B. Silliman and J. Stachowicz. pp. 365-382. Sinauer.
- 2012 **Litchman E**. Phytoplankton. In *Metabolic Ecology: a Scaling Approach*, edited by R.M. Sibly, J.H. Brown and A. Kodric-Brown. pp. 154-163. Wiley.

- 2007 **Litchman E.** Resource competition and the ecological success of phytoplankton. In *Evolution of Primary Producers in the Sea*, edited by P.G. Falkowski and A.H. Knoll. pp. 351-375. Academic Press.
- 1990 Levich AP, EA Titova, **E Litchman** (EG Lichman) and AA Vasin. Model analysis of the manipulation of algal community structure. *In: Mathematical models in environmental management*. Rostov-on-Don (In Russian).

Popular Articles and Reports

- Dyble J, M-A Evans, D Hyndman, **E Litchman**, MS Phanikumar, O Sarnelle, RJ Stevenson. 2008. Complex interactions among land, water, and harmful algal blooms. GESI Report.
- Litchman E**, CA Klausmeier, D Steiner, D Hohmann and P Bossard. 2002. Wie die Tageslänge bei Phosphorknappheit die Lebensgemeinschaften von Algen in Seen beeinflussen kann. EAWAG yearly report.
- Weiler CS et al. 2000. Perspectives on graduate education experiences in aquatic sciences. ASLO Bulletin 9: 20-22.

Invited Workshops and Symposia

- 2022 Invited speaker, Gordon Research Conference “Unifying Ecology Across Scales”, NH (rescheduled from 2020 due to COVID-19)
- 2021 Invited speaker, 6th International Conference “Molecular Life of Diatoms”, virtual format
- 2019 Invited participant, Workshop on Trait-based Ecological Theory, Lago Cadagno, Switzerland
- Invited participant, Workshop on the Mechanics of Food Webs, iDiv, Leipzig, Germany
- Invited participant, Workshop on Microbiome Solutions: Hope, Hype and Horizon, iDiv, Leipzig, Germany
- Invited speaker, Symposium “From genes to traits - marine microbes, changing climate”, University of Hamburg, Germany
- Invited speaker, Symposium on Functional Marine Biodiversity - Integrative Research Perspectives, Helmholtz Institute for Functional Marine Biodiversity, Oldenburg, Germany
- Invited keynote speaker, “DynaTrait” DFG Priority Program meeting, Potsdam, Germany
- Invited participant, Workshop on Functional Rarity, CESAB, Montpellier, France
- 2018 Invited plenary speaker, International Conference on Harmful Algae, Nantes, France
- Invited participant, Working group on “Ecological strategies of bacteria and archaea via species traits”, Macquarie University, Sydney, Australia
- 2017 Invited speaker, Symposium on “Linking Functional Traits to Species Coexistence in Changing Environments”, Ecological Society of America Meeting, Portland, OR
- Invited speaker, Simons Foundation Conference on Mathematical Modeling of Living Systems, New York, NY
- 2016 Invited speaker, workshop on “Global co-evolution of the ocean environment and its ecology”, University of Bristol, UK
- 2015 Invited keynote speaker, 9th Symposium for European Freshwater Sciences, Geneva, Switzerland

Invited keynote speaker, DynaTrait Priority Programme meeting, German National Science Foundation (DFG), Hannover, Germany

Invited speaker, "Trait-based Approaches to Marine Life" Symposium, Waterville Valley, NH

Invited speaker, "Trait-based ecology at the micro-scale" Symposium, Ecological Society of America Annual Meeting, Baltimore, MD

Invited speaker, 2015 European Ecological Federation Congress, Rome, Italy

Invited speaker, Royal Society workshop on marine microbial experimental evolution, Kavli Royal Society International Centre, Buckinghamshire, Great Britain

2014 Invited plenary speaker, Ocean Carbon and Biogeochemistry scoping workshop on "Improving predictive biogeochemical models through single cell-based analyses of marine plankton physiological plasticity, genetic diversity and evolutionary processes", Bigelow Laboratory for Ocean Sciences, ME

Invited discussion leader, Gordon Research Conference "Unifying Ecology Across Scales", University of New England, ME

Invited speaker, Gordon Research Conference "Ocean Global Change Biology", NH

Invited speaker, organized oral session "Whether in Life or in Death: Fresh Perspectives on How Plants Affect Biogeochemical Cycling", Ecological Society of America Annual Meeting, Sacramento, CA

2013 Invited participant, Workshop on "Stoichiometric constraints of biodiversity – functioning relationships (StoichFun)", Leipzig, Germany

Invited speaker, CNRS School on Innovative Approaches in Marine Environment Modeling. European Institute of Marine Studies (IUEM), Brest, France

Invited speaker, Ocean Carbon and Biogeochemistry workshop on "Evolutionary responses of plankton to climate change", Woods Hole, MA

Invited keynote speaker, ESF EuroEEFG workshop "Understanding, managing and protecting microbial communities in aquatic and terrestrial ecosystems: Exploring the trait-based functional biodiversity approach", Wageningen, the Netherlands

2012 Invited participant, working group on Plankton community assembly, EAWAG, Switzerland

Invited participant, workshop on improving the representation of phytoplankton physiology in marine ecosystem models, University of Exeter, Great Britain

Invited speaker, workshop on "Mechanisms underlying biodiversity-ecosystem functioning relationships", Jena, Germany

2011 Invited participant, NSF workshop on "Bioenergy from photosynthetic microorganisms: What are the basic research needs?" Washington, DC

Invited participant, Investigative workshop "Individual-based Ecology of Microbes", NIMBioS, University of Tennessee

Invited keynote speaker at the roundtable discussion of the new Research Priority Program for the German Research Foundation "The importance of trait variation for the dynamics of ecological systems", Potsdam, Germany

Invited tutorial speaker, ASLO Aquatic Sciences meeting, session on "Mechanistic descriptions of diverse plankton communities: from observations to models", San Juan, Puerto Rico

- 2010-13 Invited participant, working group on “Food web dynamics and stoichiometric constraints in meta-ecosystems”, NIMBioS, University of Tennessee
- 2010 Invited participant, NSF workshop on “Evolution and Climate Change in the Oceans (ECCO)”, Catalina Island, California
 Invited participant, workshop on “Open problems in biological oceanography”, Princeton University, NJ
 Invited speaker, Gordon Research Conference on “Metabolic basis of ecology”, University of New England, ME
 Invited plenary speaker, International workshop on “Predictability of Plankton Communities in an Unpredictable World”, Amsterdam, The Netherlands
 Invited speaker, ASLO Ocean Sciences Meeting, session on “Climate Change and Ocean Biology: Integrating Conceptual Frameworks and Experimental Approaches to Predict Planktonic Responses”, Portland, OR
- 2009 Invited speaker, Symposium on the “Interactions between ecological and evolutionary processes in aquatic ecosystems”, Kastanienbaum, Switzerland
- 2008 Invited discussion leader, EUROCEANS workshop on “Constraining, understanding and modeling biocomplexity in plankton communities.” Naples, Italy
- 2007 Invited participant, US-French Symposium on Environmental Sensor Networks, French Embassy and Georgetown University, Washington, D.C.
- 2007-12 Invited core participant, TraitNet, Research Coordination Network (PIs: S. Naeem and D. Bunker), Columbia University, NY
- 2004 Invited speaker, Gordon Research Conference “Metabolic Basis of Ecology”, Lewiston, ME
 Invited participant, Workshop on the “Present and future of ecological stoichiometry (Woodstoich 2004)”, Finse, Norway
- 2002 Invited participant, NSF Biocomplexity Conference “Biodiversity of planktonic communities: scaling up and down”. Ann Arbor, MI
- 1999 Invited participant, American Society for Limnology and Oceanography DIALOG III Symposium, Bermuda

Invited Seminars and Lectures

- 2021 Department of Global Ecology, Carnegie Institution, CA
- 2019 German Centre for Integrative Biodiversity Research (iDiv), Leipzig, Germany
 Charles University, Prague, Czech Republic
 Mediterranean Centre for Environment and Biodiversity (CeMEB), Montpellier, France
 INRA, Eco&Sol, Montpellier, France
 MARBEC, Montpellier, France
 Ben Gurion University of Negev, Sede Boker, Israel
- 2017 Petersen Foundation Award Public Lecture, Helmholtz Center for Ocean Research (GEOMAR), Germany
- 2016 University of Vienna, Austria
 Marie Tharp Lecture, GEOMAR Helmholtz Centre for Ocean Research, Kiel, Germany
- 2015 University of Amsterdam, the Netherlands
 University of Basel, Switzerland
 University of Texas-Austin, TX

- Michigan State University, Department of Plant Biology
- 2014 Duke University Marine Lab, Beaufort, NC
WasserCluster Lunz, Austria
Kellogg Biological Station and Department of Integrative Biology, MSU
- 2013 University of Zürich, Switzerland
- 2012 University of Texas-Arlington, TX
Umeå University, Sweden
Lund University, Sweden
EAWAG, Switzerland
- 2011 Danish Technical University, Section of ocean ecology and climate, Charlottenlund, Denmark
Center for Macroecology, Evolution and Climate, University of Copenhagen
Marine Ecological Modeling Centre, Aarhus, Denmark
- 2010 University of California-San Diego, CA
McGill University, Canada
- 2009 EEBB Program, MSU
- 2008 Western Michigan University, Kalamazoo, MI
- 2007 Frontier Research Center for Global Change, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan
Center for Ecological Research, Kyoto, Japan
Department of Zoology, University of Wisconsin, Madison, WI
- 2006 Kenyon College, Ohio
Oakland University, Michigan
Annis Water Resources Institute, Grand Valley State University, Michigan
- 2005 Curriculum in Ecology, University of North Carolina-Chapel Hill
Department of Ecology and Evolutionary Biology, University of Michigan
School of Biology, Georgia Institute of Technology, Atlanta, GA
W.K. Kellogg Biological Station and Zoology Department, Michigan State University
- 2004 Department of Zoology, University of Toronto
Department of Ecology, Evolution and Marine Biology, University of California–Santa Barbara
- 2002 Large Lakes Observatory, University of Minnesota–Duluth
- 2001 Max Planck Institute for Limnology, Plön, Germany
- 2000 University of Basel, Basel, Switzerland
Swiss Federal Institute for Environmental Science and Technology, Zürich, Switzerland
Ludwig Maximilians–Universität, Munich, Germany
Horn Point Laboratory, Center for Environmental Studies, University of Maryland

Teaching

- 2005–pres ZOL/PLB 896 *Population and Community Ecology*, EEB core graduate course (20-32 students each year) (with G. Mittelbach (2005-2016) and C. Klausmeier (2010, 2016-2018, 2020). Fall semesters, MSU
- 2016 Invited lectures at the International Summer School on *Marine Ecology and the Earth System*, University of Bristol, UK

- 2015 *Topics in Quantitative Microbial Ecology and Evolution: Robustness and stability in microbial communities* (w/S. Evans and C. Klausmeier), spring semester
- 2013, 2015 *Algal Biology*, 2-week intensive field summer course at KBS, MSU (with R. Lowe)
- 2013 Guest lecture, Wellesley College field course at Lake Baikal, Russia
Invited lecturer, International Summer School on *Innovative Approaches in Marine Environment Modeling*, IUEM, Plouzané, France
- 2012 Guest lecture in *Biological oceanography*, DTU Aqua, Denmark
Invited lecturer at the International Summer School on *Large Lakes Biology*, Irkutsk State University, Russia
- 2010 Graduate seminar on *Quantitative Microbial Ecology and Evolution*, (w/J. Lennon, J. Lau and C. Klausmeier), fall semester
Field Aquatic Ecology, 2-week intensive graduate/undergraduate summer course at KBS
Phytoplankton Ecology, Guest Lecture in MMG *Microbial Ecology* undergraduate/graduate class (J. Lennon and N. Walker)
- 2009 Graduate seminar on *Advances in microbial community ecology and biogeography* (w/J. Lennon and C. Klausmeier), fall semester
Invited lecturer, International Summer School for PhD students on *Interactions between ecological and evolutionary processes in aquatic ecosystems*, Kastanienbaum, Switzerland
- 2008 Graduate seminar on *Trait-based approaches to community ecology and evolution* (w/J. Lau), spring semester;
Phytoplankton Ecology guest lecture in *Algal Biology* (J. Stevenson)
Biogeochemistry MMG 426 (with J. Lennon and S. Hamilton), summer
- 1991–1997 Teaching Assistant, University of Minnesota. *General Biology*, *Introduction to Ecology* (non-majors), *Ecology* (majors), *Limnology* and *Limnology Laboratory*

Students Advised

PhD students

Jarad Mellard (2004-2010, co-advised with C. Klausmeier), now associate professor at Tromsø University, Norway

Mridul Thomas (2007-2013), Best presentation award at IAGLR conference (2009), Marvin Hensley Fellowship, MSU dissertation completion fellowship, co-1st author *Science* paper, EU Marie Curie postdoctoral fellowship at DTU, Denmark, now assistant professor, University of Geneva, Switzerland

Colin Kremer (2009-2014, co-advised with C. Klausmeier), NSF predoctoral fellowship, co-1st author *Science* paper, NSF postdoctoral fellowship in mathematical biology at Yale and Princeton, now assistant professor, UCLA

Jakob Nalley (2011-2016), MSU Plant Sciences Fellowship, NSF GK-12 graduate fellowship, NSF predoctoral fellowship honorable mention, Future Academic Scholars in Teaching Fellow, education coordinator at Northwestern University, now R&D Officer at Qualitas Health

Daniel O'Donnell (2012-2018), NSF predoctoral fellowship, MSU dissertation completion fellowship, now postdoc at UC Davis

Paul Wilburn (2012-2018), NSF predoc fellowship honorable mention, C-MORE Marine Microbiology field course, PSA research grant, MSU Continuation Fellowship, NASA postdoctoral fellow, NASA, Ames, CA

Carol Waldmann Rosenbaum (2021-), MSU Plant Sciences Fellowship

Esther Wong (2021-)

PhD Committees and visiting graduate students

Alan Wilson (2004-2005, GA Tech), Geoff Horst (2005-2012, MSU), Kevin Wyatt (2005-2010, MSU), Linda Novitski (2006-2013, MSU), Paula de Tezanos Pinto (2006-2008, U of Buenos Aires, Argentina), Stephanie Miller (2007-, MSU), Veronika Huber (2007, U of Berlin, Germany), Micalaella Dell Desotelle (2008-, MSU), Justin Meyer (2008-2012, MSU), Allison Rober (2008-2012, MSU), Jacob Gillette (2009-2015, SUNY ESF), Elizabeth Miller (2009-2016, MSU), Patrick Hanly (2012-2017, MSU), Carlos Cáceres (2012, U of Oviedo, Spain), Alexandra Rafalski (2013-20), Kirill Shchapov (2013-2016, Irkutsk State University, Russia), Bo Liu (2013-2018, MSU), Chad Zirbel (2015-2018, MSU), Şeyda Erdogan (2015-2016, Middle East Technical University, Turkey), Ammar Safaie (2015-2017, MSU), Connie Rojas (2016-2021, MSU), Meredith Zettelmoeyer (2016-2020, MSU), Ravi Ranjan (2016-2021, MSU), Domiziana Cristini (2020-, University of Konstanz, Germany), Alexi Schnur (2020-, MSU).

MS Committees

Kampanat Rungruengchaisri (2000-2001, EAWAG), Nicole Reid (2005, MSU), Elizabeth Muellen (2005-2007, MSU), Allison Rober (2006-2008, MSU), Joshua Booker (2008-2010, MSU).

Undergraduates (denotes students who co-authored papers)*

Amber Phillips (1996, Hampshire College), Kelly Maynard (1999, OSU), Binh L.V. Nguyen* (2004-2005, GA Tech) **best presentation award at ASLO 2005**, Kelly Amrhein (2006, 2007, Kalamazoo College), Rico Javier (2008, Kalamazoo College), Kelly Hickman (2008, UCSC), Caitlyn Ryan* (2009, NSF REU, SUNY Geneseo) **best presentation award at ESA 2010**, Alexandra David (2009, 2010, NSF REU, MSU), Marilyn Gould* (2011, NSF BEACON REU, U Connecticut), Mirae Guenther (2011, Kalamazoo College), Lydia Auner (2012, Carleton College), Farhana Haque (2014, NSF BEACON REU, UT Austin), Evan Johnson* (2014, 2015, Kalamazoo College), Jake Pino (2015, NSF REU, New Mexico State U), Scott Schultz (2015, URA, MSU), Krista Anderson* (2015, NSF REU, UIC), Casey Geisland (2015, URA, MSU), Clare Harper (2016, NSF REU, Beloit College), Olivia Porth (2016, URA, MSU), Katie McCullen (2016, URA, MSU), Ayley Shortridge (2017, MSU), Sophie Beery* (2017, REU, Ohio Northern U), Tim Brennhofner (2018, REU, Grinnell College), Jessica Waters (2018 and 2019, UC Davis), Steven Neher (2019, MSU), Sydney Hall (2019, 2020, John Carroll University).

High School Students (denotes a student who co-authored a paper)*

Tanisha McKoy (2007, Kalamazoo public school).

Carolyn Hamman* (2013-2015, Kalamazoo Area Mathematics and Science Center).

Mary Griffith (2014, Kalamazoo Area Mathematics and Science Center).

Julia Kemple-Johnson (2017-2018, Kalamazoo Area Mathematics and Science Center).

Postdoctoral Associates

Drs. Christopher Steiner (2005-08, MSU) now associate professor at Wayne State U, MI; Kohei Yoshiyama (2006-08, Kyoto U), now asst. professor at Gifu U Japan; Anne Schwaderer (2006-07, Kiel U), Mary Anne Evans (2007-09, U Michigan), now research scientist at U Michigan; Maayke Stomp (2008, U of Amsterdam), deceased; Paula de Tezanos Pinto (2009-10, U of Buenos Aires,

Argentina), now research scientist at U Buenos Aires, Kyle Edwards (2010-13, UC Davis), now associate professor at U of Hawai'i; Maria Stockenreiter (2013-14, U Munich), now assist. professor LMU Munich, Sabine Wollrab (2013-14, U Munich), now group leader at the IGB, Germany, Leonilde Roselli (2014, U Salento, Italy), Maria Aranguren-Gassis (2014-16, U Vigo, Spain), now researcher at U Vigo, Ghjuvan Grimaud (2016-17, Villefranche Oceanographic Laboratory), now co-founder and CEO of Biomathematica startup, France; Kaito Umemura (2016-18), now postdoc at UC Berkeley; John Guittar (2017-20, U of Michigan), now computational scientist at Myriad Genetics, Colin Kremer (2017-20), now assistant professor at UCLA, Masatoshi Katabuchi (2017-19), now associate professor at Xishuangbanna Tropical Botanical Garden, China, Tatiana Severin (2017-19), now postdoc in France, Thomas Koffel (2020-, U Montpellier).

School Teachers

Connie High, Delton, MI High School (summer 2010, 2011, 2014, 2015, 2016).

Becky Drayton, Gobbles, MI Middle School (summer 2014).

Jodie McManus, Parchment, MI High School (summer 2014, 2018).

National and International Service

Advisory Boards

- 2021- External Advisory Board, NSF EPSCoR Collaboration "From Ecosystems to Evolution: Harnessing elemental data to detect stoichiometric control-points and their consequences for organismal evolution"
- 2017- Advisory Board, PISTON, NERC Research Project "Does developmental plasticity influence speciation?", Great Britain
- 2016- Project Selection Board, AQUACOSM, European Network of Mesocosm Facilities (19 countries)
- 2012-2018 Science Advisory Board, WasserCluster Lunz, Austria
- 2011- Advisory Board, Danish Center of Excellence "Life in a changing ocean", Denmark
- 2010-2014 Science Advisory Board, National Center for Ecological Analysis and Synthesis (NCEAS), CA

Editorial Boards

2010-2020 *Journal of Plankton Research*

2010-2014 *Oecologia*

- 2021 Tenure review for Rutgers University
- 2021 Session co-organizer, ASLO Annual meeting
- 2020 Grant proposal reviewer, Stazione Zoologica Anton Dohrn, Italy
- 2020 Official opponent in the PhD defense of Sirpa Lehtinen, University of Helsinki, Finland
- 2020 Tenure reviews for Edinburgh University, Scotland; University of Texas; Oklahoma State University; Helmholtz Centre for Polar and Marine Research, Germany
- 2019 Member, Steering Committee for the "Trait-Based Approaches to Ocean Life" meeting, UK
- 2019 External Referee for PhD defense of Helena Bestova, Charles University, Czech Republic
- 2018 NASA Astrobiology review panel
- 2018 Committee member for PhD defense of Amanda Burson, University of Amsterdam

CV ELENA LITCHMAN

- 2018 Committee member for PhD defense of Pierre Ramond, Sorbonne University, France
- 2018 Professorship candidates' reviewer, University of Oldenburg, Germany
- 2018 Tenure reviews, Duke University, Texas A&M University
- 2018 Postdoc Awards judge, American Society of Naturalists Meeting, Asilomar, CA
- 2018 Endowed chair nomination reviewer, University of Minnesota
- 2018 Co-organizer for 2 sessions: "Temperature Dependence of Consumer-Resource Interactions – New Empirical and Theoretical Insights" w/W. Uszko, J. Bernhardt and C. Kremer and "Trait-based Community Organization Along Environmental Gradients - Ecological and Evolutionary Perspectives" w/J. Wickman and C. Klausmeier at the ASLO Summer meeting, Victoria, Canada
- 2017 Session co-organizer (w/E. Miller): "Community Ecology of Host-Associated Microbiomes: Using Ecological Theory to Advance Microbiology", ESA Annual Meeting, Portland, OR
- 2015 Symposium co-organizer (w/L. Roselli): "Phytoplankton Traits", 13th Congress of the European Ecological Federation, Rome, Italy.
- 2015 Session co-organizer (w/A. Martiny, J. Bonachela, S. Levin and C. Klausmeier) at ASLO Aquatic Sciences Meeting, Granada, Spain: "Impacts of Microbial Biodiversity on Aquatic Ecosystem Functioning and Biogeochemistry".
- 2015 Workshop co-organizer (w/P. Frost and C. Meunier): "Stoichiometry and Trait-based Ecology", Conference on Ecological Stoichiometry, Trent University, Canada
- 2014 NSF DEB Panel
- 2013 NSF Biological Oceanography panel
- 2012 Session co-organizer (w/A. Barton and A. Pershing) at ASLO meeting, Salt Lake City, UT: "Understanding Plankton Biogeography by Putting Functional Traits on the Map."
Session co-organizer (w/K. Yoshiyama and C. Klausmeier) at ASLO summer meeting, L. Biwa, Japan: "Vertical structure of aquatic ecosystems: observations, experiments, and theories."
- 2011 External search committee member for the position of associate lecturer in ecological stoichiometry, Umeå University, Sweden
- 2009 NSF Ecology Panel
Session co-organizer (w/C. Klausmeier and J. Huisman) at ASLO Aquatic Sciences Meeting, Nice, France: "Trait-based approaches to plankton ecology."
- 2007 Session co-organizer (w/A. Kustka) at ASLO Aquatic Sciences Meeting, Santa Fe, NM: "Phytoplankton nutrient uptake and requirements: from molecular mechanisms to ecosystem impacts."
- 2005 Session co-organizer (w/C. Klausmeier) at ASLO Summer Meeting, Santiago de Compostela, Spain: "Advances at the interface of theoretical and empirical plankton ecology."
- 2003 Session co-organizer (w/A. Quigg) at ASLO Aquatic Sciences Meeting, Salt Lake City, UT: "The evolution, ecology and biogeochemical impacts of plankton from the Paleozoic to the present."
- 2002 Co-organizer of the Princeton University and Rutgers University Biocomplexity² Meeting, Princeton University, NJ
- 1999 Chair, Marine Ecology Session, Ecological Society of America Annual Meeting, Spokane, WA

1999 Co-coordinator (w/P. Neale) of the 1999 meeting of the SIL Group for Aquatic Primary Productivity (UV effects group), Zürich, Switzerland

Reviewer for NSF (Ecology, Biocomplexity in the Environment, Biological Oceanography), FWF (Austrian National Science Foundation), The Netherlands Science Foundation (NWO), SNF (Swiss National Science Foundation), MSU Center for Water Sciences, NSERC, *American Naturalist*, *Aquatic Sciences*, *Archiv für Hydrobiologie*, *Arctic*, *Antarctic and Alpine Research*, *Biological Reviews*, *Ecography*, *Ecological Modelling*, *Ecological Research*, *Ecology*, *Ecology Letters*, *Environmental Science and Technology*, *European Journal of Phycology*, *Evolutionary Applications*, *Fundamental and Applied Limnology*, *Hydrobiologia*, *ISME Journal*, *Journal of Marine Research*, *Journal of Natural Resources and Life Sciences Education*, *Journal of Phycology*, *Journal of Plankton Research*, *Limnology and Oceanography*, *Marine and Freshwater Research*, *Marine Ecology Progress Series*, *New Phytologist*, *Oecologia*, *Oikos*, *Photochemistry and Photobiology*, *Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society B*.

University Service

2021-present Core faculty, Center for Intelligent Water Resources Engineering

2021 College of Natural Sciences endowed chairs and professors review committee

2020-present Culture and Inclusion Committee member, KBS, MSU

2016-2019 Faculty Advisory Committee, Department of Integrative Biology, MSU

2016-2018 KBS Seminar Committee, Chair

2016-2017 KBS Grad Affairs Committee

2015-2018 Graduate Advisory Committee (chair since 2017), Department of Integrative Biology, MSU

2014-pres Mentoring committee of assistant professor Elise Zipkin, Integrative Biology

2013-2018 College of Natural Sciences Faculty Advisory Council

2016-2017 SPG proposal review panel on Environmental Studies and Energy, MSU

2015 Guest panelist in the Professional Success Series for graduate students and postdocs, MSU (x2)

2014 Guest panelist in the "Visiting funding agencies" discussion, MSU

2014-2016 Space Use Committee, KBS

2013 Zoology Chairperson Selection and Review Committee

2012-2016 KBS Graduate Affairs Committee Chair

2011-2014 EEBB Curriculum Committee

2010-2012 Blue Ribbon Blue Panel, MSU Strategic Initiative in Water Sciences

2010-2013 Faculty Advisory Committee, KBS

2009 MSU Representative at the Coalition for National Science Funding 15th Annual Exhibition on Capitol Hill, Washington, DC

2008-2009 College-wide Initiative on Water and Sustainability in the Great Lakes Region, Steering Committee

- 2007-2008 Committee Member, Plant Functional Ecologist Search, PLB, MSU
- 2006-2009 Graduate Recruitment Committee, KBS
- 2006-2011 Space Use Committee, KBS
- 2006-2008 MSU Plant Sciences Graduate Fellowships Committee
- 2005-2006 Graduate Recruitment Committee, KBS
Education and Outreach Assistant Director Search Committee, KBS
KBS Academic Planning Committee, KBS, MSU
- 1998–1999 Member, Seminar Series Committee, Smithsonian Environmental Research Center
- 1996–1997 Student Member, Limnology Faculty Search Committee, Department of Ecology, Evolution and Behavior, University of Minnesota

Outreach

- 2017 Talk at the MSU Foundation’s Board of Directors meeting
- 2016 Talk to Russian environmental managers through *Colleagues International*, Kalamazoo, MI
- 2015 Invited talk to local residents, Pierce Cedar Creek Institute, MI
- 2014 Host to high school teachers Connie High and Jodie McManus and a middle school teacher Becky Drayton (summer)
Invited talk at the Gull Lake Watershed Association meeting
Talk to local residents. Spring “Dessert with Discussion” Program, KBS
- 2013 Invited talk to MSU Alumni “Microalgae in lakes and oceans: the good, the bad and the ugly”
Invited plenary talk to local teachers, GK-12 Symposium, KBS
Talk to Wellesley College students at Lake Baikal, Russia
- 2010, 2011 Host to a high school teacher Connie High (Delton High School) in the summer
- 2010 Talk on “Water quality and harmful algal blooms in the changing climate” to local residents. KBS, “Dessert with Discussion” program
- 2009 Talk on “Water quality and harmful algal blooms in the changing climate” to K-12 teachers and GK-12 graduate fellows
- 2008 Tour of Pine Lake, MI for Four Township Association and local residents
- 2007 Invited talk on harmful algal blooms at the MI chapter of NALMS (North American Lake Management Society)
- 2007 Invited talk on harmful algal blooms at the MI Department of Environmental Quality (DEQ) meeting
- 2007 Gull Lake Community Schools Science Fair judge
- 2006 Provided job shadowing opportunity for a minority high school student, Tanisha McKoy, through Kalamazoo Regional Educational Service Agency

My lab regularly answers questions from local residents on water quality and algal blooms.

Selected Media Coverage of Research

1. *Nature 2004 paper*: Nature highlights: "Oceans 16" Nature May 13, 2004.
2. *PNAS 2009 paper*: "Mighty diatoms: global climate feedback from microscopic algae", MSU News <http://news.msu.edu/story/6074/>, March 16, 2009.
The story was covered by national and international online media: NSF's News from the Field, NASA's Earth Observatory, sciencedaily.com, innovations-report.de, EurekAlert.org and others.
3. 2009: "Michigan State Collaboration Spawns Robotic Fish to Monitor Water Quality," MSU News, <http://news.msu.edu/story/7057/>, November 2, 2009
Related coverage:
"MSU Receives Grant to Develop Robot Fish," the State News, November 3, 2009
"NEMO's New Mission: Find Toxic Algae Blooms," Capital News Service, MSU School of Journalism, November 6, 2009
"Robotic Fish a Step Forward for Zoologists: MSU-developed Tool Monitors Oxygen, Temperature in Water," Lansing State Journal, December 26, 2009
The story was covered by national and international media: US News and World Report, Scientific American, Science Daily, Great Lakes IT Report, Great Lakes Echo, Science 360 News Service, Engadget, Swedish Public Radio and many others.
4. *Ecology Letters 2010 paper*: "Invisible invasive species", MSU News, UPI, Sciencedaily, Science360.gov, NSF.gov, Conservation Magazine, innovations-report.com, MI Public Radio, MSN.com and many others.
5. *2012 Science paper*: Nature highlights: "Plankton diversity loss looms"; New Scientist: "Tropical plankton exodus by 2100"; NSF, ClimateCentral and many others.
6. *Petersen Foundation Excellence Professorship Award*: Schleswig-Holstein Magazin TV program, Germany, July 2017.

Professional Affiliations

American Society of Limnology and Oceanography (ASLO), Ecological Society of America (ESA), Global Lake Ecological Observatory Network (GLEON), International Society for Microbial Ecology (ISME), American Society for Microbiology (ASM)