Mridul K. Thomas

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EDUCATION AND APPOINTMENTS

2020 – present	Maître-assistant (senior researcher and lecturer), Microbial Ecology group of Prof. Bastiaan Ibelings, University of Geneva, Switzerland.
2017 – 2019	Marie Curie fellow and postdoctoral researcher, Technical University of Denmark. Supervisor: Prof. Thomas Kiørboe
2014 – 2017	Postdoctoral researcher, Eawag (Swiss Federal Institute of Aquatic Science and Technology), Switzerland. Supervisor: Dr. Francesco Pomati
2007 – 2013	Ph.D. in Zoology and Ecology, Evolutionary Biology & Behaviour, Michigan State University, USA. Advisor: Prof. Elena Litchman. Dissertation: *The effect of temperature on the ecology, evolution, and biogeography of phytoplankton*
2005 – 2007	M.S. in Marine Science, specialization in Marine Biology, Goa University, India. Dissertation: *Iron uptake and nitrate addition in two species of macroalgae*
2002 – 2005	B.S. in Zoology. Loyola College, University of Madras, India.

RESEARCH INTERESTS

Quantitative ecology, phytoplankton, thermal biology, multiple drivers/stressors, experimental design

AWARDS, GRANTS AND FELLOWSHIPS

**Amounts shown in CHF equivalent. Total amount awarded ~708k CHF*

2023	SNF COST grant (with Bastiaan Ibelings), funding 1 PhD student and equipment: *The effects of changing temperatures on diatom-chytrid dynamics and carbon fluxes to lake sediments* (319k)
2023	AQUACOSM-plus small grant for mesocosm experiment: *The effects of nutrients, predation pressure, and light on phytoplankton trait and size-abundance distributions* (~3k)

2021 SNF R'Equip grant (with Bastiaan Ibelings), funding equipment for LéXPLORE lake research platform: *Quantifying high-frequency plankton and nutrient dynamics in Lake Geneva* (89k)

2021 Collaborator (with no funds directly awarded to me) on UK NERC grant *Empirical determination of the interaction landscape for temperature, CO2 and nitrate for a model diatom* led by Prof. Sinead Collins (grant amount 701k)

2018 EU Marie Curie fellowship (252k)

2017 Eawag Academic Transition Grant (30k)

2013 Dissertation Completion Fellowship (5k)

2012 Dr. Marvin Hensley Endowed Fellowship in Science, awarded for environmental research (5k)

2010 T. Wayne & Katherine Porter Fellowship, awarded for graduate research in ecology and evolution (1k)

2009 Best Student Poster Award, International Association for Great Lakes Research annual conference

2009 Kellogg Biological Station G. H. Lauff Research Award, for graduate research in ecology and evolution (500)

2009 Sigma Xi Grant-in-aid of Research, for student research in science (700)

2008 MSU College of Natural Science Summer Support Fellowship (4k)

2008 Kellogg Biological Station Graduate Fellowship (2k)

PEER-REVIEWED PUBLICATIONS

Statistics: 42 publications, >4500 citations, h-index 25
Google Scholar page: https://scholar.google.com/citations?user=sncMX-kAAAAJ&hl=en
ORCID: https://orcid.org/0000-0002-5089-5610
§ indicates undergraduate author

I. ECOLOGY PAPERS

A few selected papers highlighted.

35. Briddon, CL, M Nicoară, A Hegedűs, **MK Thomas** & B Drugă (2025). Quantifying evolutionary changes to temperature-CO2 growth response surfaces in *Skeletonema marinoi* after adaptation to extreme conditions. *ISME Communications*, 5(1), ycaf069.

34. Giesler JK, DB Van de Waal, **MK Thomas**, L Šupraha, F Koch, T Harder, C Pein, U John, & S Wohlrab (2025). What does it mean to be(come) Arctic? Functional and genetic traits of Arctic- and temperate- adapted diatoms. *Global Change Biology*, 31:e70137.

33. **Thomas, MK**† & R Ranjan† (2024). Designing more informative multiple-driver experiments. *Annual Review of Marine Science*, 16, 513-536.
† contributed equally

We review and explain a variety of possible experimental designs for multiple driver/stressor research. We show that (i) the most commonly used designs are the least informative, and (ii) there are better, more informative designs that are relatively unknown in ecology and oceanography.

32. Gjoni, V, DS Glazier, BW Ibelings, JS Wesner & **MK Thomas** (2024). Temperature, resources, and predation interact to shape phytoplankton size-abundance relationships at a continental scale. *Global Ecology and Biogeography*, 32, 2006-2016.

31. Suarez, EL, LD Ventura, A Stöckli, C Ordóñez, **MK Thomas**, BW Ibelings & DF McGinnis (2023). The emergence and dominance of *Planktothrix rubescens* as an hypolimnetic cyanobacterium in response to re-oligotrophication of a deep peri-alpine lake. *Limnology & Oceanography*, 68, 1346-1359.

30. Litchman, E† & **MK Thomas**† (2023). Are we underestimating the ecological and evolutionary effects of warming? Interactions with other environmental drivers increase vulnerability to high temperatures. *Oikos*, 2023(2), e09155.
† contributed equally

We argue that scientists are dramatically underestimating the impact of ongoing and future warming by neglecting evidence showing that sensitivity to extreme temperatures is increased by interactions with other factors such as nutrients/food, pH, etc. This has important consequences for biodiversity conservation and agriculture.

29. Wierenga, J, **MK Thomas**, R Ranjan & BW Ibelings (2022). Complex effects of chytrid parasites on the growth of the cyanobacterium *Planktothrix rubescens* across interacting temperature and light gradients. *ISME Communications*, 2 (93).

28. Kath, NJ, **MK Thomas** & U Gaedke (2022). Mysterious ciliates: seasonally recurrent and yet hard to predict. *Journal of Plankton Research*, 44(6), 891-910.

27. Collins, S, H Whittaker & **MK Thomas** (2022). The need for unrealistic experiments in global change biology. *Current Opinion in Microbiology*, 68, 102151.

We explain why understanding and predicting the effects of multiple drivers/stressors relies on better experimental design, and that present temperature-CO2 interaction experiments do not meet our needs.

26. Mesman, JP, AI Ayala, S Goyette, J Kasparian, R Marcé, H Markensten, JAA Stelzer, MW Thayne, **MK Thomas**, DC Pierson & BW Ibelings (2022). Drivers of phytoplankton responses to summer wind events in a stratified lake: A modeling study. *Limnology & Oceanography,* 67(4), 856-873.

25. Meyer, MF, R Ladwig, J Mesman, I Oleksy, CC Barbosa, KM Cawley, AN Cramer, J Feldbauer, PQ Tran, JA Zwart, GAL Moreira, M Shikhani, D Gurung, RT Hensley, E Matta, RP McClure, T Petzoldt, NS Lopez, K Soetaert, **MK Thomas**, SN Topp & X Yang (2021). The AEMON-J "Hacking Limnology" workshop series & virtual summit: Incorporating data science and open science in aquatic research. *Limnology & Oceanography Bulletin*, 30(4), 140-143.

24. Kiørboe, T & **MK Thomas** (2020). Eukaryotic heterotrophs show a fast-slow continuum, not a gleaner-exploiter trade-off. *PNAS*, 117(40), 24893-24899.

** featured in multiple media reports, including on Swiss radio*

We tested a commonly-believed ecophysiological hypothesis that is embedded in major ecosystem models. Our findings falsified this hypothesis in both aquatic & terrestrial ecosystems.

And associated reply to a published comment on the paper:

Kiørboe, T & **MK Thomas** (2021). Reply to Letten and Yamamichi: A rescue at the cost of falsifiability. *PNAS*, 118(5), e2025720118.

23. Bernhardt, JR, P Kratina, A Pereira, M Tamminen, **MK Thomas** & A Narwani (2020). The evolution of competitive ability for essential resources. *Phil. Trans. R. Soc. B.* 375, 20190247.

22. Lindegren, M, **MK Thomas**, SH Jónasdóttir, TG Nielsen & P Munk (2020). Environmental niche separation promotes coexistence among ecologically similar zooplankton species – North Sea copepods as a case study. *Limnology & Oceanography*, 65, 545-556.

21. Lewington-Pearce, L, A Narwani, **MK Thomas**, CT Kremer, H Vogler & P Kratina (2019). Temperature-dependence of minimum resource requirements alters competitive hierarchies in phytoplankton. *Oikos*, 128, 1194-1205.

20. Fontana, S, **MK Thomas,** M Reyes & F Pomati (2019). Resource supply drives even spacing of individuals along multiple trait axes in light-limited phytoplankton populations. *The ISME Journal*, 13, 1159–1167.

19. **Thomas, MK**, S Fontana, M Reyes & F Pomati (2018). Quantifying cell densities and biovolumes of phytoplankton communities and functional groups using scanning flow cytometry, machine learning and unsupervised clustering. *PLoS one,* 13(5), e0196225.

18. **Thomas, MK**, S Fontana, M Reyes, M Kehoe & F Pomati (2018). The predictability of a lake phytoplankton community, over time-scales of hours to years. *Ecology Letters,* 21, 619-628.

    We used machine learning methods to quantify how the abiotic environment affects the predictability of a lake phytoplankton community. This will help improve ecological forecasts.

17. Fontana, S, **MK Thomas**, M Moldoveanu, P Spaak & F Pomati (2018). Regularity in the traits of individuals outcompetes other biodiversity metrics in explaining ecosystem properties. *The ISME Journal*, 12, 356-366.

16. Ryan, CN[§], **MK Thomas** & E Litchman (2017). The effects of phosphorus and temperature on the competitive success of an invasive cyanobacterium. *Aquatic Ecology,* 51(3), 463-472.

15. Kremer, CT, **MK Thomas** & E Litchman (2017). Temperature- and size-scaling of phytoplankton population growth rates: reconciling the Eppley curve and the metabolic theory of ecology. *Limnology & Oceanography,* 62, 1658-1670.

14. Pomati, F, J Jokela, S Castiglioni, **MK Thomas** & L Nizzetto (2017). Micropollutants reduce phenotypic diversity and response capacity of natural phytoplankton communities. *PLoS one*, 12, e0174207.

13. **Thomas, MK**, M Aranguren-Gassis, CT Kremer, MR Gould[§], K Anderson[§], CA Klausmeier & E Litchman (2017). Temperature-nutrient interactions exacerbate sensitivity to warming in phytoplankton. *Global Change Biology,* 23, 3269-3280.
**** Cited in IPCC 6th assessment report***.

We used experiments and mathematical modelling to show that interactions between temperature and nutrients shape species' growth and geographical ranges, with large implications for global ecosystems in the future.

12. Edwards, KF, **MK Thomas**, CA Klausmeier & E Litchman (2016). Phytoplankton growth and the interaction of light and temperature: A synthesis at the species and community level. *Limnology & Oceanography*, 61, 1232-1244

11. Listmann, L, M LeRoch, L Schlüter, **MK Thomas** & TBH Reusch (2016). Swift thermal reaction norm evolution in a key coccolithophore species. *Evolutionary Applications*, 9, 1156-1164.

10. **Thomas, MK**, CT Kremer & E Litchman (2016). Environment and evolutionary history determine the global biogeography of phytoplankton temperature traits. *Global Ecology and Biogeography*, 25, 75-86.

We showed that marine and freshwater phytoplankton have adapted to local temperature conditions globally, but that the relationship between temperature traits and the environment differs between taxonomic groups, This is probably because of constraints imposed by other ecophysiological traits.

9. **Thomas, MK** & E Litchman (2016). Effects of temperature and nitrogen availability on the growth of invasive and native cyanobacteria. *Hydrobiologia*, 763(1), 357-369.

8. Litchman, E, P de Tezanos Pinto, KF Edwards, CA Klausmeier, CT Kremer & **MK Thomas** (2015). Global biogeochemical impacts of phytoplankton: a trait-based perspective. *Journal of Ecology,* 103, 1384-1396.

7. Edwards, KF, **MK Thomas**, CA Klausmeier & E Litchman (2015). Light and growth in marine phytoplankton: allometric, taxonomic, and environmental variation. *Limnology & Oceanography*, 60(2), 540-552.

6. Boyd, PW, TA Rynearson, EA Armstrong, F Fu, K Hayashi, Z Hu, DA Hutchins, RM Kudela, E Litchman, MR Mulholland, U Passow, RF Strzepek, KA Whittaker, E Yu & **MK Thomas** (2013). Marine phytoplankton temperature versus growth responses from polar to tropical waters - Outcome of a scientific community-wide study. *PLoS one*, 8(5), e63091. **Last author position reflects second largest contribution to the paper.*

5. **Thomas, MK**[†], CT Kremer[†], CA Klausmeier & E Litchman (2012). A global pattern of thermal adaptation in marine phytoplankton. *Science*, 338(6110), 1085-1088.
[†] contributed equally
**** ISI Web of Science highly cited paper***, *featured in media reports by Nature, New Scientist and F1000*
**** Cited in IPCC 5th and 6th assessment reports***.

We showed that globally, phytoplankton are strongly adapted to local temperature conditions and that tropical species are very close to a dangerous threshold. A small amount of warming will lead to local

extinctions and decreases in tropical biodiversity unless species evolve rapidly. This paralleled contemporary findings in a range of terrestrial organisms, including amphibians and reptiles.

4. Litchman, E, KF Edwards, CA Klausmeier & **MK Thomas** (2012). Phytoplankton niches, traits and eco-evolutionary responses to global environmental change. *Marine Ecology Progress Series*, 470, 235-248

3. Edwards, KF, **MK Thomas**, CA Klausmeier & E Litchman (2012). Allometric scaling and taxonomic variation in nutrient utilization traits and maximum growth rate of phytoplankton. *Limnology and Oceanography*, 57(2), 554-566.

2. Mathews, B, A Narwani, S Hausch, E Nonaka, H Peter, M Yamamichi, KE Sullam, K Bird, **MK Thomas** et al. (2011). Toward an integration of evolutionary biology and ecosystem science. *Ecology Letters*, 14(7), 690-701.

1. Litchman, E, P de Tezanos Pinto, CA Klausmeier, **MK Thomas** & K Yoshiyama (2010). Linking traits to species diversity and community structure in phytoplankton. *Hydrobiologia*, 653(1), 15-28.

II. OTHER FIELDS (contributed statistical analysis as collaborator)

7. AS Thomas, E Tsui, KR Armbrust, S Kodati, MK Berkenstock, EC Davis, **MK Thomas** & S Gangaputra (2025). Burnout Among US Uveitis Specialists – An Assessment of Prevalence and Contributing Factors. *American Journal of Ophthalmology*, 279, 48-55.

6. AS Thomas, **MK Thomas**, EC Davis, S Fowler, EW Schneider, FM Recchia & CC Awh (2023). A Comparison of Peel-Induced Maculopathy Following ILM Peeling Using a Microvacuum Pick Versus Forceps. *Ophthalmic Surgery, Lasers and Imaging Retina*, 54(1), 37-42

5. EW Schneider, **MK Thomas**, FM Recchia, DA Reichstein & CC Awh (2023). Sustained Biweekly Aflibercept For Refractory Neovascular Age-Related Macular Degeneration: The Prospective TRISTAR Study. *Retina*, 43(5), 739-746

4. Awh, CC, EC Davis, **MK Thomas** & AS Thomas (2022). Short-term outcomes after interim treatment with brolucizumab: a retrospective case series of a single center experience. *Retina*, 42(5), 899-905.

3. Birnbaum, FA, S Chandramouli, **MK Thomas** & JA Rosdahl (2020). The Role of Gender in Ophthalmology Resident Evaluations. *Journal of Academic Ophthalmology*, 12(01), e8-e14.

2. Birnbaum, FA, AS Thomas, **MK Thomas**, SP Yoon, P Dmitriev, JS Kim, JH Powers, K Khan, M Gomez-Caraballo & S Fekrat (2019). The Effect of Select Systemic Medications on Visual Outcomes in Diabetics with Branch Retinal Vein Occlusion. *Journal of VitreoRetinal Diseases*, 3(4), 215-222.

1. Thomas, AS, **MK Thomas**, AP Finn & S Fekrat (2019). Use of Ischemic Index on Widefield Fluorescein Angiography to characterize a Central Retinal Vein Occlusion as ischemic or non-ischemic. *Retina*, 39(6), 1033-1038.

PUBLICATIONS AND RESOURCES - NON-PEER REVIEWED

Thomas, MK & S Collins. Statistics tutorial: Fitting a response curve to data from singledriver experiments. Includes segment on implementing the results of these analyses in theoretical models. Link #5 at https://meddle-scor149.org/vignettes/

Thomas, MK & S Collins. Statistics tutorial: Fitting a response surface to data from multipledriver experiments. Link #6 at https://meddle-scor149.org/vignettes/

Thomas, MK. R Code: Cleaning and clustering SFCM data. 2017. DOI:10.5281/zenodo.999747. https://doi.org/10.5281/zenodo.999747

Long, T, S Martin, J Pierce, T Robinson, K Schmitt, **MK Thomas**, & S Wyse. (2012). Campus trees: A study of local phenology. DOI:10.1126/science.1213528. Online supplement to: Long, T, & S Wyse. (2012). A season for inquiry: Investigating phenology in local campus trees. *Science*, 335 (6071), 932–933.
**This plan for a semester-long student project was published as a free teaching resource.*

PRESENTATIONS

Invited oral presentations:

2024 How do interacting environmental drivers shape ecological dynamics? University of Konstanz, Germany.

2024 How should we link experiments with mathematical models to better predict our uncertain future? Graduate student invited speaker for Edinburgh Earth, Ecology and Environment Doctoral Training Partnership, University of Edinburgh, Scotland.

2024 How do interacting environmental drivers shape ecological dynamics? University of Edinburgh, Scotland.

2024 Understanding how abiotic interactions shape ecological dynamics. University of Connecticut, USA.

2024 Predicting the ecological effects of warming needs more than temperature projections. Yale University, USA.

2024 How do interacting environmental drivers shape ecological dynamics? Alfred Wegener Institute for Polar and Marine Research, Germany.

2023 Getting to the heart of how interacting environmental drivers shape ecological dynamics. University of Technology Sydney, Australia

2023 Building a mechanistic understanding of how abiotic interactions shape ecological dynamics, University of Fribourg, Switzerland.

2021 *Keynote:* Understanding the causes and consequences of the shape of driver interactions. International Phycological Congress symposium on 'Ocean Global Change: acclimation and adaptation to multiple environmental drivers', Chile.

2020 *Keynote:* Uncovering the trade-offs governing phytoplankton dynamics in nature. DynaTrait Annual Meeting, Potsdam, Germany.

2020 How will a changing environment affect future phytoplankton communities? University of Oldenburg, Germany.

2020 Inferring mechanisms from ecological time series. Leibniz-Institute for Freshwater Ecology and Inland Fisheries (IGB), Stechlin, Germany.

2019 Inferring Mechanisms from Ecological Dynamics. University of Potsdam, Germany.

2018 Quantifying functional traits and community predictability from ecological time series. Alfred Wegener Institute for Polar and Marine Research, Germany.

2018 Inferring mechanisms from noisy dynamics to predict an uncertain future. Gordon Research Conference on Ocean Global Change Biology, Waterville Valley, USA.

2018 How do we predict the future of phytoplankton? University of Hamburg, Germany.

2017 How do we predict the future of phytoplankton? Imperial College London, UK.

2017 How predictable are phytoplankton communities? Queen Mary University of London, UK.

2017 Understanding how complex environments influence phytoplankton. Centre for Ocean Life, Technical University of Denmark.

2016 The effects of temperature on present and future phytoplankton communities. Gordon Research Conference on Unifying Ecology Across Scales, Biddeford, USA.

2016 Phytoplankton traits across space and time: linking environmental change with community patterns. GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany.

2015 Phytoplankton traits across space and time: linking environmental change with community patterns. University of Oldenburg, Germany.

2013 The effects of ocean warming on marine phytoplankton diversity. Symposium on 'The Biological Impacts of Tropical Warming for Ectothermic Animals', San Juan, PR.

Contributed oral presentations:

2024 Thomas, MK. Understanding how the environment shapes phytoplankton performance. Swiss Ocean Day, University of Bern, Switzerland.

2023 Thomas, MK & U Gaedke. Inferring the mechanisms and trade-offs that govern ecological dynamics from time series. ASLO conference, Palma de Mallorca, Spain.

2022 Thomas, MK. Trait-based ecology: from understanding patterns to predicting/forecasting dynamics in nature. Session plenary at INTECOL conference, Geneva, Switzerland.

2015 Thomas, MK, S Fontana & F Pomati. Storms and nutrient competition drive high-frequency phytoplankton size dynamics. Ecological Society of America annual conference, Baltimore, USA.

2015 Thomas, MK, S Fontana & F Pomati. Rapid changes in phytoplankton size distributions are driven by competition for nutrients and storms. Symposium for European Freshwater Sciences (SEFS9), Geneva, Switzerland.

2015 Thomas, MK, S Fontana & F Pomati. Understanding rapid *in situ* shifts in phytoplankton traits. Association for the Sciences of Limnology and Oceanography annual conference, Granada, Spain.

2014 Thomas, MK, CT Kremer & E Litchman. Environment and evolutionary history determine the global biogeography of phytoplankton temperature traits. Ecological Society of America annual conference, Sacramento, USA.

2012 Thomas, MK, CT Kremer, CA Klausmeier & E Litchman. A global pattern in phytoplankton thermal adaptation and its consequences. MSU EEBB Colloquium, East Lansing, USA.

2011 Thomas, MK, CT Kremer, CA Klausmeier & E Litchman. Phytoplankton adaptation to temperature across the world ocean. American Society for Limnology and Oceanography annual conference, San Juan, PR.

2011 Thomas, MK, CT Kremer, E Litchman & CA Klausmeier. Ocean warming drives diversity changes and range shifts in the fundamental niches of marine phytoplankton. Ecological Society of America annual conference, Austin, USA.

2010 Thomas, MK, E Litchman & CA Klausmeier. Temperature niches of phytoplankton across the world ocean. Ecological Society of America annual conference, Pittsburgh, USA.

Poster presentations:

2022 Thomas, MK, F dos Santos Correia, M Devanthéry & B Ibelings. Tracking high-frequency phytoplankton community change in Lake Geneva, LéXPLORE research platform annual meeting, Lausanne, Switzerland.

2020 Thomas, MK & T Kiorbøe. There is no gleaner-opportunist trade-off across species. DynaTrait Annual Meeting, Potsdam, Germany.

2020 Thomas, MK. Uncovering the trade-offs governing phytoplankton dynamics in nature. Microbial Ecology and Evolution conference, USA.

2017 Thomas, MK, S Fontana, M Reyes, M Kehoe & F Pomati. Estimating phytoplankton competition traits in the field using high-frequency monitoring and machine learning. Workshop on Trait-Based Approaches to Ocean Life, Bergen, Norway.

2015 Thomas, MK, CT Kremer & E Litchman. Tropical convergence, temperate divergence: evolutionary inferences from the biogeography of phytoplankton temperature traits. Workshop on Trait-Based Approaches to Ocean Life, Waterville Valley, USA.

2015 Thomas, MK, S Fontana & F Pomati. Nutrient competition and storms drive high-frequency phytoplankton cell size dynamics. Biology15 conference, Duebendorf, Switzerland.

2014 Thomas, MK & F Pomati. Uncovering the drivers of single-cell phytoplankton trait gradients. GLEON annual meeting, Jouvence, Orford, Canada.

2012 Thomas, MK, MR Gould[§] & E Litchman. Phytoplankton fitness landscapes across gradients in temperature and phosphorus concentration. Ecological Society of America annual conference, Portland, USA.

2010 Thomas, MK, E Litchman & CA Klausmeier. Temperature niches of phytoplankton in the world oceans. MSU BEACON Congress, East Lansing, USA.

2010 Thomas, MK, E Litchman & CA Klausmeier. Temperature niches of phytoplankton in the world oceans. Gordon Research Conference on the Metabolic Basis of Ecology, Biddeford, USA.

2009 Thomas, MK & E Litchman. Growth responses of invasive & native cyanobacteria to temperature. International Association for Great Lakes Research annual conference, Toledo, USA. **Won award for Best Student Poster*

TEACHING EXPERIENCE

2020-2025 Sole instructor for Master's course in advanced statistics and machine learning (MTH Analyses de données 2), for Environmental Sciences students. This course is part of the EU Alliance Learning Pathway on Biodiversity, Ecology and Evolution.

2023-2025 Sole instructor for Master's course in introductory statistics (MTH Analyses de données 1), for Environmental Sciences students. This course is part of the EU Alliance Learning Pathway on Biodiversity, Ecology and Evolution.

2021-2025 Lectured and conducted lab exercises on biodiversity quantification and assessment in Ecology Bachelor's course.

2020-2022 Lectured and ran lab exercises on phylogenetics in Evolution of Life Bachelor's course

2021 Workshop on machine learning for early career limnologists and environmental scientists at the DSOS (Data Science and Open Science) and AEMON-J (Aquatic Ecosystem MOdeling Network - Junior) Hacking Limnology Workshop series. Video and course materials available here.

2017 Resource competition theory (Guest Lecturer) for Mathematical Biology Master's course.

2010-2013 Eminent Ecologists seminar series (Teaching Assistant), 4 semesters. I organized a seminar series and moderated group discussions.

2012 Ecology online course (Teaching Assistant). I assisted with course assessment design, graded assignments, provided students with feedback, and moderated online discussions. I also evaluated course effectiveness and helped plan future improvements.

2012 Workshop on meta-analysis for high school students (Co-teacher). I led this workshop as part of a summer residential program on evolution hosted by MSU's BEACON Center for the Study of Evolution in Action. Students analysed published data for patterns in selection gradients that they presented in a poster session.

2012 Mathematics in biology - exponential growth module (Teacher). I taught incoming science undergraduate students as part of KBS' A2Biology program, aimed at introducing students to the importance of math in scientific research. I delivered a lecture and led classroom discussions, as well and conducted laboratory and statistical components.

2011 Eco-evolutionary dynamics (Guest Lecturer). I taught a portion of a Population and Community Ecology Ph.D. course.

2010 Field Aquatic Ecology (Teaching Assistant). I taught lab sessions, demonstrated field techniques, assisted student groups with developing and performing research projects, and managed field trips.

2007-2008 Organisms & Populations Laboratory (Teaching Assistant), 3 semesters. Aside from teaching this lab course, I developed new course materials and contributed to a complete restructuring and rewriting of the course. The TAs for the course incorporated backwards design for the first time to make it more goal-driven & learner-centric. A long-term student project we developed to measure the effects of climate change on tree phenology was published as a *Science* supplementary (full citation in non-peer reviewed papers section)

OTHER PROFESSIONAL ACTIVITIES

2020- Member of Scientific Committee on Oceanic Research (SCOR) Working group on Changing Ocean Biological Systems. We disseminate knowledge of how multidimensional environmental change shapes the world oceans. We also develop free experimental design and data analysis resources and teach workshops in multiple countries to improve scientific practice. Two tutorials I developed are hosted here: https://meddle-scor149.org/vignettes/ (links #5 and #6). As part of this effort, I have also written two papers on experimental design, Collins et al. (2022) and Thomas & Ranjan (2024).

2016- In the top 100 contributors (out of >300k) on CrossValidated, the world's top online statistics forum. Reached >1 million people with data analysis advice

2022 Co-organised session on 'Trait based community ecology helps us see better' at Intecol international conference in Geneva, Switzerland.

2022 Co-organised session on 'From nutrients and phytoplankton to fish, and back: understanding bottom-up and top-down mechanisms shaping energy and mass flux in marine food webs' at ASLO international conference in Hawaii, USA.

2018 Participant in month-long Antarctic training program on Biological Adaptation to Environmental Change, McMurdo Station, Antarctica

2015 Participant in workshop on Linking Stoichiometry and Biodiversity, Terramare, University of Oldenburg, Germany

2014 Participant in 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, USA

2007 Research assistant on 3-week oceanographic research cruise on board ORV Sagar Kanya, in the Bay of Bengal.

2006 Research assistant on 10-day oceanographic research cruise on board ORV Sagar Kanya, in the Arabian Sea.

MENTORSHIP

I have mentored a number of students (undergrad to PhD) and postdocs in the US, Switzerland and Denmark. Five undergraduate students have performed independent research projects under my supervision, two of which have been published and one is being prepared for submission. I have previously co-supervised six Master's students, five Ph.D. candidates, and two postdocs. I am presently co-supervising four Ph.D. candidates, in addition to serving on the committee to three other Ph.D. candidates working in different countries. I am a co-author on nine papers with these students and postdocs so far, with

more in preparation. I also informally mentor a number of additional students from diverse backgrounds.

REVIEWING

PNAS, Nature Climate Change, Nature Communications, Ecology Letters, Global Change Biology, Limnology and Oceanography, Proceedings of the Royal Society B: Biological Sciences, Global Ecology and Biogeography, Ecology, Oecologia, Aquatic Ecology, Theoretical Ecology, Ecography, Frontiers in Microbiology, Hydrobiologia, PLoS one, Journal of Plankton Research and *Journal of Phycology.*

OUTREACH

2021	Jointly created the Covid Variant Tracking Project in December 2020 to monitor and inform the public about new detections of dangerous Covid variants around the world. Our site was visited >25,000 times and our twitter handle @covidvariants was followed by scientists and policymakers from the US, South America and Europe, as well as the public. Our effort was superseded by expert tracking efforts after ~3 months.
2020	Helped interpret and disseminate scientific developments about Covid for non-scientific audiences through facebook and my website www.mridulkthomas.com/covid
2020	Publicised recent work on trade-offs, which was discussed on Swiss radio.
2019	Mentored a high school student science project to understand how nutrients from effluents affect algal communities.
2018	Engaged with students around the world on life and research in Antarctica on a website I set up while training in Antarctic biology at McMurdo Station. Also organised video conversations with student groups and letters from scientists to them, to discuss science and environmental change in Antarctica.
2014	Educated members of the public about the role algae play in ecosystems using live samples from a local stream.
2012	Interviewed by New Scientist magazine about climate change's effects on phytoplankton.
2011-2012	Led school tours through the phytoplankton lab, teaching them about the ecological research being performed at the field station.
2011	Wrote a blog post about my research at MSU, recommended by the Scientific American EvoEcoLab blog

COMMITTEE SERVICE

2018	DTU Centre for Ocean Life Academic Retreat Committee
2013	KBS Faculty Search Committee
2011-2013	KBS Sustainability Team
2012-2013	KBS Housing Committee
2009-2010	KBS Graduate Recruitment Committee

PROFESSIONAL MEMBERSHIPS

Scientific Committee on Oceanic Research (SCOR) Working group 149 on Changing Ocean Biological Systems

Association for the Sciences of Limnology and Oceanography

Ecological Society of America