LUCAS P. MEDEIROS

Woods Hole Oceanographic Institution
Biology Department - Redfield Building, Room 116
https://lucaspdmedeiros.com | lucas.medeiros@whoi.edu

Last updated on November 15, 2024

ACADEMIC APPOINTMENTS

Woods Hole Oceanographic Institution *2024 - present*
Postdoctoral Investigator
Supervisors: Heidi Sosik and Michael Neubert

University of California Santa Cruz *2022 - 2024*
Postdoctoral Scholar
Supervisors: Stephan Munch and Eric Palkovacs

EDUCATION

Massachusetts Institute of Technology *2018 - 2022*
Ph.D. in Civil and Environmental Engineering
Advisor: Serguei Saavedra
Thesis: Understanding and predicting responses of ecological communities to perturbations

University of São Paulo *2015 - 2017*
M.S. in Ecology
Advisor: Paulo Guimarães Jr
Thesis: Coevolution in mutualistic networks: gene flow and selection mosaics

University of São Paulo *2014 - 2017*
B.S. in Applied and Computational Mathematics

University of São Paulo *2009 - 2013*
B.S. in Biological Sciences
Advisor: Paulo Guimarães Jr

PUBLICATIONS

Submitted:

2. **Medeiros, L. P.**, Sorenson, D. K., Johnson, B. J., Palkovacs, E. P., and Munch, S. B. (Under review at *Proceedings of the National Academy of Sciences*). Revealing unseen dynamical regimes of ecosystems from population time-series data. https://www.biorxiv.org/content/10.1101/2024.08.07.607005v1

1. Lerm, R., **Medeiros, L. P.**, Thompson, D., Ehlers Smith, D., and Downs, C. (Submitted to *Conservation Letters*). Bird communities show resilience to an extreme weather event, drought, across a savanna protected area.

Published:

10. **Medeiros, L. P.** and Saavedra, S. (2023). Understanding the state-dependent impact of species correlated responses on community sensitivity to perturbations. *Ecology*, e4115. https://doi.org/10.1002/ecy.4115

9. Camacho, L. A., Andreazzi, C. S., **Medeiros, L. P.**, Birskis-Barros, I., Emer, C., Reigada, C., and Guimarães Jr, P. R. (2023). Cheating interactions favor modularity in mutualistic networks. *Oikos*, 2023(3), e09176. https://doi.org/10.1111/oik.09176

8. **Medeiros, L. P.**, Allesina, S., Dakos, V., Sugihara, G., and Saavedra, S. (2023). Ranking species based on sensitivity to perturbations under non-equilibrium community dynamics. *Ecology Letters*, 26(1), 170-183. https://doi.org/10.1111/ele.14131

7. **Medeiros, L. P.***, Song, C.*, and Saavedra, S. (2021). Merging dynamical and structural indicators to measure resilience in multispecies systems. *Journal of Animal Ecology*, 90(9), 2027–2040. https://doi.org/10.1111/1365-2656.13421 (*equal contribution)

6. **Medeiros, L. P.**, Boege, K., Del-Val, E., Zaldívar-Riverón, A., and Saavedra, S. (2021). Observed ecological communities are formed by species combinations that are among the most likely to persist under changing environments. *The American Naturalist*, 197(1), E17–E29. https://doi.org/10.1086/711663

5. Saavedra, S., **Medeiros, L. P.**, and AlAdwani, M. (2020). Structural forecasting of species persistence under changing environments. *Ecology Letters*, 23(10), 1511-1521. https://doi.org/10.1111/ele.13582

4. Pires, M. M., O'Donnell, J. L., Burkle, L. A., Diaz-Castelazo, C., Hembry, D. H., Yeakel, J. D., Newman, E. A., **Medeiros, L. P.**, De Aguiar, M. A. M., and Guimarães Jr, P. R. (2020). The indirect paths to cascading effects of extinctions in mutualistic networks. *Ecology*, 101(7), e03080. https://doi.org/10.1002/ecy.3080

3. Cenci, S., **Medeiros, L. P.**, Sugihara, G., and Saavedra, S. (2020). Assessing the predictability of nonlinear dynamics under smooth parameter changes. *Journal of the Royal Society Interface*, 17(162), 20190627. https://doi.org/10.1098/rsif.2019.0627

2. **Medeiros, L. P.**, Garcia, G., Thompson, J. N., and Guimarães Jr, P. R. (2018). The geographic mosaic of coevolution in mutualistic networks. *Proceedings of the National Academy of Sciences*, 115(47), 12017-12022. https://doi.org/10.1073/pnas.1809088115

1. Dáttilo, W., Lara-Rodríguez, N., Jordano, P., Guimarães Jr, P. R., Thompson, J. N., Marquis, R. J., **Medeiros, L. P.**, Ortiz-Pulido, R., Marcos-García, M. A. and Rico-Gray, V. (2016). Unraveling Darwin's entangled bank: architecture and robustness of mutualistic networks with multiple interaction types. *Proceedings of the Royal Society B*, 283(1843), 20161564. https://doi.org/10.1098/rspb.2016.1564

AWARDS

Principles of Community Award -
Fisheries Collaborative Program (UC Santa Cruz) *2024*

Vito Volterra Award for Best Student Oral Presentation -
Theoretical Ecology Section of the ESA 2021 Conference *2021*

Best M.S. Thesis of the year in Ecology -
University of São Paulo *2017*

FELLOWSHIPS

Ph.D. Fellowship - Martin Family Society of Fellows for Sustainability
(MIT Environmental Solutions Initiative) *2021 - 2022*

Ippen Fellowship for Travel Support - Massachusetts Institute of Technology *2020 and 2021*

Ph.D. Scholarship - Swiss Government Excellence Scholarship (declined) *2018*

Laboratory Technician Scholarship - São Paulo Research Foundation *2017 - 2018*

M.S. Scholarship - São Paulo Research Foundation *2015 - 2017*

Scientific Initiation Scholarship - São Paulo Research Foundation *2014*

M.S. Scholarship - National Council for Scientific and Technological Development - *2015*
(For the 1st place in the M.S. admissions in Ecology at the University of São Paulo)

TEACHING

Instructor for Modeling for Conservation and Management of Natural Populations -
BIOE-215 (UC Santa Cruz) *Spring 2024*
Created lecture and homework material, lectured, and graded assignments

Instructor for Instituto Serrapilheira's Quantitative Ecology Field Course
(Brazilian Amazon) *July 2023*
Supervised graduate student's field projects

TA for Probability and Causal Inference - 1.010
(Massachusetts Institute of Technology) *Fall 2021*
Planned and conducted recitations

TA for Ecological Dynamics and Modeling - 1.873
(Massachusetts Institute of Technology) *Spring 2021*
Conducted tutorials/discussions and graded problem sets

TA for Probability and Causal Inference - 1.010
(Massachusetts Institute of Technology) *Fall 2020*
Graded problem sets

TA for Ecological Dynamics and Modeling - 1.873
(Massachusetts Institute of Technology) *Spring 2020*
Conducted tutorials/discussions and graded problem sets

TA for Probability and Causal Inference - 1.010
(Massachusetts Institute of Technology) *Fall 2019*

Graded problem sets

TA for EcoEscola Field Course
(University of São Paulo) *January 2017*
Supervised undergraduate student's field projects

TA for Southern-Summer School on Mathematical Biology
(ICTP-SAIFR) *January 2016*
Supervised graduate student's modeling projects

TA for Diversity, Natural History and Conservation of South American Vertebrates
(University of São Paulo) *Fall 2015*
Moderated discussions and graded problem sets

TA for R Language for Data Analysis in Ecology
(University of São Paulo) *March 2014*
Moderated tutorials and graded problem sets

MENTORING

Loreane Dias (University of São Paulo)
Co-advisor of PhD thesis (Advisor: Paulo Inácio Prado) *January 2024 - present*

Thomas Meerwij (Wageningen University)
Co-advisor of Master's thesis (Advisor: Masha van der Sande) *January 2024 - July 2024*

Participated in the mentoring program of the
ESA Theoretical Ecology Section *2023 - 2024*

PRESENTATIONS

Invited talk - Review of the Cooperative Institute for Marine Ecosystems and Climate
(Scripps Institution of Oceanography) *May 2024*

Conference talk - Ecological Society of America
(Portland, OR) *August 2023*

Invited talk - Emerging Scholars in Integrative Biology
(Boston University) *March 2023*

Conference talk - American Society of Naturalists
(Pacific Grove, CA) *January 2023*

Workshop talk - 20th Annual UCSC & Stanford Species Interactions Workshop
(UC Santa Cruz) *December 2022*

Invited talk - Symposium on market squid
(NOAA Southwest Fisheries Science Center) *November 2022*

Ph.D. thesis defense - Department of Civil and Environmental Engineering
(Massachusetts Institute of Technology) *May 2022*

Invited talk - Physics of Living Systems
(Massachusetts Institute of Technology) *May 2022*

Invited talk - EcoEncontros at University of São Paulo
(Virtual) *December 2021*

Invited talk - Ecological Resilience Webinar of the British Ecological Society
(Virtual) *September 2021*

Conference talk - Ecological Society of America
(Virtual) *August 2021*

Invited talk - Evolutionary and Ecological Systems Biology talks
(Massachusetts Institute of Technology) *September 2020*

Poster presentation - MIT Quantitative Ecology Meeting
(Massachusetts Institute of Technology) *January 2020*

Conference talk - American Society of Naturalists
(Pacific Grove, CA) *January 2020*

Invited talk - Simple Person's Applied Math Seminar
(Massachusetts Institute of Technology) *September 2019*

Invited talk - Opening lectures of the Graduate Program in Ecology
(University of São Paulo) *March 2018*

Invited talk - EcoEscola
(University of São Paulo) *January 2017*

Poster presentation - Evolution
(Austin, TX) *June 2016*

PROFESSIONAL SERVICE

Subject Editor at *Oikos* *2024 - present*

Reviewed manuscripts for the following journals (Web of Science):
Ecology (1), Ecological Complexity (1), Ecology Letters (5),
Journal of Animal Ecology (1), Methods in Ecology and Evolution (1),
Nature Communications (1), Oikos (4), PLOS Computational Biology (1) *2018 - present*

Main organizer of symposium on Population Fluctuations in Ecology
at the ESA 2023 Conference (Portland, OR)
Speakers: Karen Abbott, Jeff Gore, Tanya Rogers, and Daniel Wieczynski *August 2023*

Conducted and presented modeling/data analyses for the Squid Fishery Advisory Committee in collaboration with the California Department of Fish and Wildlife — *February 2023 - May 2024*

Conducted modeling/data analyses for Covid-19 BR Observatory in collaboration with several Brazilian researchers (https://covid19br.github.io) — *March - May 2020*

Judged talks/posters for prizes at 2 ASN and 1 ESA conference — *2020 - 2023*

Helped organizing the annual Fritz Muller Seminar Series (University of São Paulo, https://fritzmuller.weebly.com) — *2014 - 2018*

COMPUTATIONAL SKILLS

R (advanced)
Python (basic)
C (basic)
Git and GitHub
LaTeX
Microsoft Office

LANGUAGES

English (fluent)
Portuguese (native)
Spanish (basic)