

LUCAS P. MEDEIROS

Woods Hole Oceanographic Institution

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Last updated on June 15, 2025

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

Papers can be accessed from [my website](#).

Submitted:

3. **Medeiros, L. P.**, Neubert, M. G., Sosik, H. M., and Munch, S. B. (Under review). A nonequilibrium framework for community responses to pulse perturbations. <https://www.biorxiv.org/content/10.1101/2025.05.14.654148v1>
2. Honda, I. A., **Medeiros, L. P.**, Thompson, C. R. S., Britten, G. L., Runge, J. A., and Ji, R. (Under review). Seasonal Trophic Controls Drive Population Variability in a Foundational Marine Copepod.

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

Published:

11. **Medeiros, L. P.**, Sorenson, D. K., Johnson, B. J., Palkovacs, E. P., and Munch, S. B. (2025). Revealing unseen dynamical regimes of ecosystems from population time-series data. *Proceedings of the National Academy of Sciences*, 122(24), e2416637122. <https://doi.org/10.1073/pnas.2416637122>
10. **Medeiros, L. P.** and Saavedra, S. (2023). Understanding the state-dependent impact of species correlated responses on community sensitivity to perturbations. *Ecology*, 104(8), 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>
MIT News Article: [A better way to tell which species are vulnerable](#).
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.

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
M.S. Scholarship - National Council for Scientific and Technological Development (For the 1st place in the M.S. admissions in Ecology at the University of São Paulo)	2015
Scientific Initiation Scholarship - São Paulo Research Foundation	2014

TEACHING

Instructor for Modeling for Conservation and Management of Natural Populations - BIOE-215 (UC Santa Cruz) <i>Created lecture and homework material, lectured, and graded assignments</i>	Spring 2024
Instructor for Instituto Serrapilheira's Quantitative Ecology Field Course (Brazilian Amazon) <i>Supervised graduate student's field projects</i>	July 2023
TA for Probability and Causal Inference - 1.010 (Massachusetts Institute of Technology) <i>Planned and conducted recitations</i>	Fall 2021
TA for Ecological Dynamics and Modeling - 1.873 (Massachusetts Institute of Technology) <i>Conducted tutorials/discussions and graded problem sets</i>	Spring 2021

TA for Probability and Causal Inference - 1.010 (Massachusetts Institute of Technology) <i>Graded problem sets</i>	<i>Fall 2020</i>
TA for Ecological Dynamics and Modeling - 1.873 (Massachusetts Institute of Technology) <i>Conducted tutorials/discussions and graded problem sets</i>	<i>Spring 2020</i>
TA for Probability and Causal Inference - 1.010 (Massachusetts Institute of Technology) <i>Graded problem sets</i>	<i>Fall 2019</i>
TA for EcoEscola Field Course (University of São Paulo) <i>Supervised undergraduate student's field projects</i>	<i>January 2017</i>
TA for Southern-Summer School on Mathematical Biology (ICTP-SAIFR) <i>Supervised graduate student's modeling projects</i>	<i>January 2016</i>
TA for Diversity, Natural History and Conservation of South American Vertebrates (University of São Paulo) <i>Moderated discussions and graded problem sets</i>	<i>Fall 2015</i>
TA for R Language for Data Analysis in Ecology (University of São Paulo) <i>Moderated tutorials and graded problem sets</i>	<i>March 2014</i>

MENTORING

Loreane Dias (University of São Paulo) <i>Co-advisor of PhD thesis (Advisor: Paulo Inácio Prado)</i>	<i>January 2024 - present</i>
Thomas Meerwijk (Wageningen University) <i>Co-advisor of Master's thesis (Advisor: Masha van der Sande)</i>	<i>January 2024 - July 2024</i>
Participated in the mentoring program of the ESA Theoretical Ecology Section	<i>2023 - present</i>

PRESENTATIONS

Invited talk - Biology Department Seminar (Woods Hole Oceanographic Institution)	<i>April 2025</i>
Invited talk - Review of the Cooperative Institute for Marine Ecosystems and Climate (Scripps Institution of Oceanography)	<i>May 2024</i>
Conference talk - Ecological Society of America	

(Portland, OR)	<i>August 2023</i>
Invited talk - Emerging Scholars in Integrative Biology (Boston University)	<i>March 2023</i>
Conference talk - American Society of Naturalists (Pacific Grove, CA)	<i>January 2023</i>
Workshop talk - 20th Annual UCSC & Stanford Species Interactions Workshop (UC Santa Cruz)	<i>December 2022</i>
Invited talk - Symposium on market squid (NOAA Southwest Fisheries Science Center)	<i>November 2022</i>
Ph.D. thesis defense - Department of Civil and Environmental Engineering (Massachusetts Institute of Technology)	<i>May 2022</i>
Invited talk - Physics of Living Systems (Massachusetts Institute of Technology)	<i>May 2022</i>
Invited talk - EcoEncontros at University of São Paulo (Virtual)	<i>December 2021</i>
Invited talk - Ecological Resilience Webinar of the British Ecological Society (Virtual)	<i>September 2021</i>
Conference talk - Ecological Society of America (Virtual)	<i>August 2021</i>
Invited talk - Evolutionary and Ecological Systems Biology talks (Massachusetts Institute of Technology)	<i>September 2020</i>
Poster presentation - MIT Quantitative Ecology Meeting (Massachusetts Institute of Technology)	<i>January 2020</i>
Conference talk - American Society of Naturalists (Pacific Grove, CA)	<i>January 2020</i>
Invited talk - Simple Person's Applied Math Seminar (Massachusetts Institute of Technology)	<i>September 2019</i>
Invited talk - Opening lectures of the Graduate Program in Ecology (University of São Paulo)	<i>March 2018</i>
Invited talk - EcoEscola (University of São Paulo)	<i>January 2017</i>
Poster presentation - Evolution (Austin, TX)	<i>June 2016</i>

PROFESSIONAL SERVICE

Subject Editor at [Oikos](#) 2024 - present

Reviewed manuscripts for the following journals ([Web of Science](#)):
Ecology (1), *Ecological Complexity* (1), *Ecology Letters* (6),
Ecological Monographs (1), *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

RESEARCH CRUISES

Main duties: sample seawater to analyze biological variables, deploy oceanographic instruments, and analyze oceanographic data.

R/V Armstrong (AR88) - 6 days at sea ([NES-LTER project](#)) April 2025

R/V Atlantic Explorer (AE2426) - 6 days at sea ([NES-LTER project](#)) November 2024

COMPUTATIONAL SKILLS

Codes can be accessed from [my GitHub](#).

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

LANGUAGES

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