

LUCAS P. MEDEIROS

Woods Hole Oceanographic Institution
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Last updated on December 16, 2025

ACADEMIC APPOINTMENTS

Woods Hole Oceanographic Institution Postdoctoral Investigator Supervisors: Heidi Sosik and Michael Neubert	<i>2024 - present</i>
University of California Santa Cruz Postdoctoral Scholar Supervisors: Stephan Munch and Eric Palkovacs	<i>2022 - 2024</i>

EDUCATION

Massachusetts Institute of Technology Ph.D. in Civil and Environmental Engineering Advisor: Serguei Saavedra Thesis: <i>Understanding and predicting responses of ecological communities to perturbations</i>	<i>2018 - 2022</i>
University of São Paulo M.S. in Ecology Advisor: Paulo Guimarães Jr Thesis: <i>Coevolution in mutualistic networks: gene flow and selection mosaics</i>	<i>2015 - 2017</i>
University of São Paulo B.S. in Applied and Computational Mathematics	<i>2014 - 2017</i>
University of São Paulo B.S. in Biological Sciences Advisor: Paulo Guimarães Jr	<i>2009 - 2013</i>

PUBLICATIONS

Papers can be accessed from my website.

14. **Medeiros, L. P.**, Neubert, M. G., Sosik, H. M., and Munch, S. B. (In press). A nonequilibrium framework for community responses to pulse perturbations. *Ecology Letters*.
13. Lerm, R., **Medeiros, L. P.**, Thompson, D., Ehlers Smith, D., and Downs, C. (2025). Bird communities show resilience to an extreme drought across a large savanna protected area. *Global Ecology and Conservation*, 64, e03933. <https://doi.org/10.1016/j.gecco.2025.e03933>

12. Honda, I. A., **Medeiros, L. P.**, Thompson, C. R. S., Britten, G. L., Runge, J. A., and Ji, R. (2025). Seasonal trophic controls drive population variability in a foundational marine copepod. *Scientific Reports*, 15(1), 36018. <https://doi.org/10.1038/s41598-025-19919-2>
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>
UCSC press release: *A data-driven model to help avoid ecosystem collapse*
PNAS commentary: *Predicting regime shifts and beyond*
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 press release: *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. Dátilo, 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) 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) <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

Conference talk - Ecological Society of America (Baltimore, MD)	<i>August 2025</i>
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) *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*

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*

Conference poster - 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* (7),
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 awards at 2 ASN and 2 ESA conferences

2020 - present

Helped organizing the annual Fritz Muller Seminar Series
(University of São Paulo, <https://fritzmuller.weebly.com>)

2014 - 2018

OCEANOGRAPHIC CRUISES

Main duties: sampled seawater to quantify biological/physical variables, deployed/monitored oceanographic instruments, and analyzed real-time data from oceanographic instruments.

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)