

Mingyu Luo

Postdoctoral Researcher

Department of Ecology and Evolutionary Biology
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Research Interests

Complexity and stability of ecosystems • Population dynamics and time series analysis • Biodiversity and ecosystem functioning • Species coexistence • Food webs and energy flow • Directions of ecosystems evolution • Ecological data analysis • Complex systems • Applied mathematics and statistics

Employment

2024–present **Postdoctoral Researcher**, University of California, Los Angeles (UCLA)
Supervisor: Dr. Chuliang Song

Education

2019–2024 **Ph.D. in Ecology**, Peking University, China

Supervisor: Prof. Shaopeng Wang

Thesis: *The intrinsic connections among temporal variability, resilience, and productivity in complex ecosystems*

2015–2019 **B.S. in Pure and Applied Mathematics**, Peking University, China

Publications

= Equal contribution, * = Corresponding author

2025

Luo, M., Hallett, L.M., Reuman, D., Shoemaker L., Zhao, L., Jiang, L., Loreau, M., Reich, P.B., Tilman, D., & Wang, S.*. Short time series obscure compensatory dynamics in ecological communities. *Nature Ecology & Evolution*, 9, 1405–1413.

Associated Research Briefing: The length of time series affects patterns of species synchrony. *Nature Ecology & Evolution*, 9, 1182–1183.

Meng, B., **Luo, M.**, Loreau, M., Hong, P., Craven, D., Eisenhauer, N., Isbell, F., Liang, M., Reuman, D., Wilsey, B., van Ruijven, J., Zhao, L., & Wang, S.*. Stabilizing effects of biodiversity arise from species-specific dynamics rather than interspecific interactions in grasslands. *Nature Ecology & Evolution*, 9, 1361–1375.

Zhou, L., **Luo, M.**, Hong, P., Leroux, S., Chen, F., & Wang, S.*. Energy transfer efficiency rather than productivity determines trophic cascades. *Ecology*, 106(1), e4482.

2024

Larjavaara, M.*#, Chen, X.#, & **Luo, M.**#. A temperature-based model of biomass accumulation in humid forests of the world. *Frontiers in Forests and Global Change*, 7, 1142209.

2023

Li, J.#, **Luo, M.**#, Wang, S.*, Gauzens, B., Hirt, M.R., Rosenbaum, B., & Brose, U. A size-constrained feeding-niche model distinguishes predation patterns between aquatic and terrestrial food webs. *Ecology Letters*, 26(1), 76–86.

- Chen, X.#, **Luo, M.#**, & Larjavaara, M.*. Effects of climate and plant functional types on forest above-ground biomass accumulation. *Carbon Balance and Management*, 18(1), 1–11.
- Chen, X.*, **Luo, M.**, Kang, Y., Zhao, P., Tang, Z., Meng, Y., Huang, L., Guo, Y., Lu, X., Ouyang, L., & Larjavaara, M. Comparison between the stem and leaf photosynthetic productivity in *Eucalyptus urophylla* plantations with different age. *Planta*, 257(3), 56.
- Nie, S., Zheng, J., **Luo, M.**, Loreau, M., Gravel, D., & Wang, S.*. Will a large complex system be productive? *Ecology Letters*, 26, 1325–1335.
- Feng, S., Liu, H.*, Peng, S., Dai, J., Xu, C., Luo, C., Shi, L., **Luo, M.**, Niu, Y., Liang, B., & Liu, F. Will drought exacerbate the decline in the sustainability of plantation forests relative to natural forests? *Land Degradation & Development*, 34(4), 1067–1079.

2022

- Luo, M.**, Wang, S.*, Saavedra, S., Ebert, D., & Altermatt, F. Multispecies coexistence in fragmented landscapes. *Proceedings of the National Academy of Sciences*, 119(37), e2201503119. [Faculty Opinions recommended (now H1 Connect)]
- Wang, S.*, **Luo, M.**, Feng, Y., Chu, C., & Zhang, D. Theoretical advances in biodiversity research. *Biodiversity Science*, 30(10), 22410. (In Chinese)
- Yang, Q., Hong, P., **Luo, M.**, Jiang, L., & Wang, S.*. Dispersal increases spatial synchrony of populations but has weak effects on population variability: a meta-analysis. *The American Naturalist*, 200(4), 544–555.
- Cao, X.*, Tian, F., Herzschuh, U., Ni, J., Xu, Q., Li, W., Zhang, Y., **Luo, M.**, & Chen, F. Human activities have reduced plant diversity in eastern China over the last two millennia. *Global Change Biology*, 28(16), 4962–4976.

2021

- Luo, M.**, Reuman, D.C., Hallett, L.M., Shoemaker, L., Zhao, L., Castorani, M.C.N., Dudney, J.C., Gherardi, L.A., Rypel, A.L., Sheppard, L.W., Walter, J.A., & Wang, S.*. The effects of dispersal on spatial synchrony in metapopulations differ by timescale. *Oikos*, 130(10), 1762–1772.
- Zheng, J., Brose, U., Gravel, D., Gauzens, B., **Luo, M.**, & Wang, S.*. Asymmetric foraging lowers the trophic level and omnivory in natural food webs. *Journal of Animal Ecology*, 90(6), 1444–1454.

Teaching Experience

Spring 2020 **Teaching Assistant**, *Ecological Statistics*, Peking University
Lecturer: Shaopeng Wang

Fall 2019 **Teaching Assistant**, *Theoretical Ecology*, Peking University
Lecturer: Shaopeng Wang

Presentations

- 2026 **Oral Presentation**, *PKU Ecology Seminar*, Beijing, China
From Fine-Scale Detail to Coarse-Scale Description: A Framework for Coarse-Graining Ecological System
- 2026 **Oral Presentation**, *PKU Ecology Seminar*, Beijing, China
A geometrical framework fo ecosystem sensitivity to environmental changes
- 2025 **Oral Presentation**, *Sino-Eco Talks*, Online
Timescale affects quantitiave patterns in population dynamics
- 2025 **Oral Presentation**, *Seminar in the University of Maryland*, Colledge Park, United States
Revisiting complexity and stability in model ecosystems

- 2025 **Oral Presentation**, *ESA Annual Meeting*, Baltimore, United States
Resolutions of ecological models: coarse graining of ecological interactions (with C. Song)
- 2023 **Oral Presentation**, *Annual Meeting of Theoretical Ecology*, Xi'an, China
Spectral theory of population fluctuations
- 2020 **Oral Presentation**, *PKU-Annual Ecology Symposium*, Beijing, China
Does dispersal always increase metapopulation's spatial synchrony?
- 2020 **Poster Presentation**, *ESA Annual Meeting*, Virtual
Why time series length matter in ecological studies? Insights from a spectral perspective on metapopulation dynamics (with D.C. Reuman, L.M. Hallett, L. Shoemaker, K. Cottingham, L. Zhao, S. Wang)

Professional Service

Peer Review *Ecological Monographs* • *Ecology Letters* • *Proceedings of the Royal Society B* • *Oikos* • *Journal of Physics: Complexity* • *Biodiversity Science* (in Chinese)

Honors and Awards

- 2024 **Lin-Chao Young Scholar Award**, Peking University
- 2024 **Outstanding Doctoral Dissertation**, Peking University
- 2023 **President Scholarship**, Peking University
- 2022 **Award for Scientific Research**, Peking University
- 2017 **Winning Prize in Probability and Statistics**, S.-T. Yau College Student Mathematics Contest
- 2014 **Second Prize**, Chinese Mathematical Olympiad