

# Mingyu Luo

## Postdoctoral Researcher

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### Research Interests

Dynamics, complexity and stability of ecosystems • Theory of biodiversity and species coexistence • Food webs and energy flow • Directions of ecosystems evolution • Ecological modelling and 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. DOI: 10.1038/s41559-025-02757-w

*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. DOI: 10.1038/s41559-025-02787-4

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. DOI: 10.1002/ecy.4482

#### 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. DOI: 10.3389/ffgc.2024.1142209

#### 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. DOI: 10.1111/ele.14134

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. DOI: 10.1111/ele.14242

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 co-existence in fragmented landscapes. *Proceedings of the National Academy of Sciences*, 119(37), e2201503119. [Faculty Opinions recommended (now H1 Connect)] DOI: [10.1073/pnas.2201503119](https://doi.org/10.1073/pnas.2201503119)

Wang, S.\*, **Luo, M.**, Feng, Y., Chu, C., & Zhang, D. Theoretical advances in biodiversity research. *Biodiversity Science*, 30(10), 22410. (In Chinese) DOI: [10.17520/biods.2022410](https://doi.org/10.17520/biods.2022410)

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. DOI: [10.1086/720715](https://doi.org/10.1086/720715)

Cao, X.\*, Tian, F., Herzsuh, 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. DOI: [10.1111/gcb.16274](https://doi.org/10.1111/gcb.16274)

## 2021

**Luo, M.**, Reuman, D.C., Hallett, L.M., Shoemaker, L., Zhao, L., Castorani, M.C.N., Dudley, 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. DOI: [10.1111/oik.08298](https://doi.org/10.1111/oik.08298)

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. DOI: [10.1111/1365-2656.13464](https://doi.org/10.1111/1365-2656.13464)

## Teaching Experience

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

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

## Conference Presentations

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)

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## Professional Service

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

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## 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*