# Curriculum Vitae

# Rongfei Su

#### Email: rongfei.su@duke.com —Tel: +86 138 3803 2082

#### **RESEARCH INTERESTS**

Global change biology, urban ecology, causal inference, geospatial analysis, ecological modelling, social-ecological system (SES)

## EDUCATION

**Duke University**, Durham, North Carolina, USA *Ph.D.: Ecology, Nicholas School of the Environment* Advisor: Tong Qiu

### Shanghai Jiao Tong University, Shanghai, China

Master of Science in Engineering: Landscape science GPA: 3.90/4.00 Thesis Title: Multiple Benefits Assessment and Optimization of Community-scale Biodiversity Conservation in Cities Advisor: Ruishan Chen

Shanghai Jiao Tong University, Shanghai, ChinaSep. 2018 — Jun. 2022Bachelor of Science in Agriculture: Landscape ArchitectureGPA: 3.70/4.00Bachelor of Management: Business Administration (minor)GPA: 3.70/4.00Thesis Title: Dynamics of atmospheric ozone concentration and its association with cardiovascular mortality in Shanghai

#### PUBLICATIONS

[1] Jia, N., Li, Y., Jiang, Z., Su, R., Lan, X., Zhang, K., ... & Chen, R. (2025). Climate Change, Social Environment, Health, and Urban Inequality: Developing a Novel Adaptive Evaluation Framework. *Sustainable Cities and Society*, 106443.

[2] Su, R., Zhu, A. L., Ye, S., Jia, N., & Chen, R. (2025). Community-scale biodiversity conservation in cities. *BioScience*, 75(2), 100-103.10.1093/biosci/biae107.

[3] Su, R., Ye, S., Yu, L., Wu, J., Kang, Y., & Chen, R. (2025). Social and ecological factors on the perception of cultural ecosystem services and disservices: Insights from Shanghai, China. Landscape and Urban Planning, 259, 105373.

[4] Su, R., Huang, X., Chen, R., & Guo, X. (2024). Spatial and social inequality of hierarchical healthcare accessibility in urban system: A case study in Shanghai, China. Sustainable Cities and Society, 109, 105540.

[5] Jia, N., Xia, Z., Li, Y., Yu, X., Wu, X., Li, Y., Su, R., ... & Liu, J. (2024). The Russia-Ukraine war reduced food production and exports with a disparate geographical impact worldwide. *Communications Earth & Environment*, 5(1), 765.

[6] Su, R., Chen, R., Yu, L., Wu, J., & Kang, Y. (2024). Biodiversity in community habitat gardens in Changning District, Shanghai based on camera trapping. *Biodiversity Science*, 32(8), 24068. (in Chinese)

[7] Su, R., Chen, R., & Guo, X. (2023). Conservation strategies for biodiversity in urban community renewal: A case study of habitat garden in Changning District, Shanghai. *Biodiversity Science*, 31(7), 23118. (in Chinese)

[8] Su, R. Urbanization filters avian communities: Disentangling trait-mediated responses to stressors using hierarchical Bayesian modeling. (In preparation)

# PRESENTATIONS

Su, R., 2025. Redefining Urban Micro-Urban Green Spaces (UGSs): Towards Human-Wildlife Harmony in Cities, The 2025 IALE-North America Annual Meeting, Raleigh, North Carolina, April 15.

Su, R., Jia, N., Li, Y., 2023. Multiple Crises Expose More Vulnerable Urban Populations with polycrisis, Monthly Webinars on Spatiotemporal Innovation, Future Data Lab, October 23.

Sep. 2025 — Present

Sep. 2022 — Mar. 2025

# China-South Africa-Namibia Photovoltaic+ Social-Ecological System Sustainable Development Workshop Ecology Researcher, Advisors: Ruishan Chen (SJTU) May. — Oct. 2024

• Academic communication: This visit, coinciding with the opening of the 2024 Beijing Summit of the Forum on China-Africa Cooperation, we conducted research in Windhoek, Cape Town, Durban and Johannesburg on local clean energy potential and development, the gap between the rich and the poor, climate change and response measures, and based on this, we reported and conducted future cooperation research. I plan to use this opportunity to discover *the junction point of energy-ecology-sustainability*.

# Application of AI Technology in Bird Monitoring

Ecology Researcher, Advisors: Yuanyuan Zhang (Biodiversity Conservation Research Center) & Haifang Jian (Chinese Academy of Sciences) Mar. 2024 — Present

- Reference: Su et al., 2024, Chinese Journal of Ecology.
- Bird Species Recognition Model: Provided specialized knowledge in avian morphology, behavior, and functional traits to enhance the development of intelligent *bird recognition algorithms*. Assessed the accuracy and effectiveness of the model's recognition results, ensuring high-quality outputs.
- AI Applications in Biodiversity Monitoring and Assessment: Conducted comprehensive monitoring across nine protected areas in Beijing, Yunnan, and Shandong. Analyzed the performance of AI in bird identification, identifying strengths and potential issues. Proposed feasible improvements and strategic directions for future technology enhancement and deployment, guiding next steps in the application of AI for biodiversity conservation.

# The Nature Conservancy (TNC)

Research Intern, Habitat Garden Project, Managers: Linlin Yu (Project Director) & Jingbin Wu (Officer) Feb. — Jun. 2024

- Reference: Su et al., 2024, Biodiversity Science.
- **Biodiversity Monitoring**: <u>Innovative Use of Infrared Cameras</u>: Deployed infrared cameras in community habitat gardens (a nature-based solution in urban settings) to monitor and analyze urban biodiversity to assess species composition, spatiotemporal distribution, responses to threats. <u>Standardized Management Protocols</u>: Developed standardized infrared camera management guidelines and community engagement mechanisms for TNC. <u>Citizen Science Training</u>: Conducted citizen science training sessions for community members and the general public.
- Ecosystem Integrity Assessment: <u>Comprehensive Field Surveys</u>: Conducted field surveys using ecosystem intelligence to evaluate the ecological performance of habitat gardens. <u>Service Score Analysis</u>: Assessed seven key ecosystem services and compared the scores with data from 2023 and benchmark scenarios. <u>Annual Reporting</u>: Identified issues, provided recommendations, and compiled findings into an annual report to guide future improvements.

Consequences and Causes of Urban Community-scale Biodiversity Conservation Across Spatial Scales Graduate Researcher, Advisors: Ruishan Chen (SJTU) Sep. 2023 — Dec. 2024

- Reference: Su et al., 2023, Biodiversity Science. Su et al., 2024, Bioscience. Su et al., 2024, Landscape and Urban Planning. Su et al., (In preparation)
- Cross-scale Conceptual Framework Construction: Based on theory of *coupled human and nature systems (CHANS)*, *landscape ecology*, and *scaling theory*, I built a conceptual framework for cross-scale biodiversity-ecosystem services cascades assessment.
- Species Spatial Distribution Mapping & Habitat Network Functional Connectivity: I assessed the contribution of each habitat patches to the habitat network connectivity of 117 bird species using ensemble species distribution model (ESDM) and probability of connectivity (PC) index by combining multi-source environmental sources data and citizen science data. Additionally, I extrapolated the dispersal distances for every species based on several known distances and the morphological traits of all species.
- **Biodiversity's Cascading Effects on Ecosystem Services**: I disentangled the relationships between cultural services perceptions with habitat characteristics and wildlife diversity as well as residents' individual-level social-economic status (SES) by using *trait-based approaches* and *mixed-effect regression modeling*. The result revealed the nexus of local and landscape context-response traits-biodiversity features-effect traits-cultural ecosystem services.

# Future Data Lab (FDL) Workshop

Graduate Researcher, Advisors: Ruishan Chen (SJTU) & Nan Jia (Michigan State University) Sep. 2023 — Jan. 2024

- Reference: Su et al., 2024, Sustainable Cities and Society (SCS). Jia et al., 2023, Communications Earth & Environment. Jia et al., 2024, SCS.
- Innovative Urban Inequality Evaluation Framework: Proposed a novel *Urban Inequality Index (UII)* based on the metacoupling system and nature-human complex system, providing a comprehensive measure of urban inequality.
- **Reproducible KNIME Workflow**: Developed a methodological workflow to calculate the inequality index using the <u>Web of Science database</u>, <u>KNIME software</u>, and <u>BERT language model</u>. This workflow is <u>transferable and scalable</u>, making it applicable to larger datasets as they become available.

### Undergraduate Research Program

Student Leader, Advisor: Shoude Li (Antai College of Economics and Management, SJTU) Oct. 2020 — Sep. 2021

- Reference: Dynamic Optimal Control of Product and Process Innovation of a Monopolist with Reference Price Effects
- Dynamic Control Model: Based on the optimal control of product innovation and process innovation of a monopoly company in continuous time, a <u>dynamic control model under consumer reference prices</u> is established to explore the steady-state equilibrium of the system and related investment strategy issues.

# Mathematical Contest in Modeling (MCM)

Researcher, Advisor: Xiaofeng Gao (Department of Computer Science and Engineering, SJTU) Feb. — Mar. 2020

- Reference: Summary Sheet: BTDPE Model: Opportunities and Challenges for Scottish Fishery in the next half century under ocean warming
- Atlantic Fish Migration Under Climate Change and Its Impact on Fisheries: Developed a BTDPE (Biological-Temperature-Distance Potential Energy) model to predict the future migration patterns and rates of fish. This model utilizes a *dynamic programming algorithm* and a *one-dimensional infinite-deep potential well* concept from quantum physics. Conducted subsequent analysis on the impact of these migrations on Scottish fisheries companies using a logistic growth model.

# AWARDS AND HONORS

- Shanghai Outstanding Graduates (2025, 1st)
- National Scholarship (2024, 1st)
- First-class Scholarship (2023, **Top 10%**)
- Huahui Elite Scholarship (2023, 1st)
- First-class Comprehensive Scholarship (2018-2019,2019-2020,2020-2021, **Top 10%**)

# COMMUNITY SERVICE

- The Disabled Discrimination Mitigation
   Organized activities with Minhang District People's Government in Minhang sports park. Supported families with
   children with Down syndrome, enhancing community awareness and promoting inclusion.

   Commitment to Educational Equity
- Commitment to Educational Equity

   Volunteer d weekly to tutor children of migrant workers, coordinated by the Student Volunteer Center, improving their academic performance.

   2020

   Taught at Xinhuang Middle School in Hunan Province, a summer project organized by the School of Ocean and Civil Engineering aimed at helping bridge educational gaps for underserved students.

   2019
- Regular Blood Donation Contributed to local health initiatives through regular blood donation from 2019 to 2024 by volunteer. Yearly

#### SKILLS

- Language: Chinese (Native), English (Fluent): TOEFL (103), GRE (334+3.5)
- **Programming:** Python (proficient), R (proficient)
- Software: GIS, GEE, ENVI, KNIME, InVEST