

Shu Xie

PhD University of Groningen
Theoretical Research in Evolutionary Life Science

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EDUCATION

University of Groningen, Netherlands **2018.10 – 2024.3**

Ph.D. in Theoretical Ecology

- Supervisors: Prof. Rampal Etienne and Dr. Luis Valente
- Thesis: Trait-dependent diversification in island biogeography.
 - Proposed a stochastic model to simulate community assembly and trait dynamics over time in insular systems.
 - Developed a computational pipeline to investigate the robustness of island biogeography models ignoring trait effects.
 - Developed Bayesian inference methods (MCMC and ABC) to estimate rates in diversification models.

China Agriculture University, China **2016.9 – 2018.6**

M.S. in Grassland Restoration Ecology

- Supervisor: Prof. Kun Wang
- Thesis: Effects of interrow grass cultivation on soil physicochemical properties and grape quality in vineyards.
- Other projects: Response of soil microbial biomass to climate and land use change (Global *meta*-analysis).

China Agriculture University, China **2012.9 - 2016.6**

B.S. in Grassland Restoration Ecology

- Supervisor: Prof. Kun Wang
- Thesis: Allelopathic effects of *Orychophragmus violaceus* on the germination and growth of forage.

PUBLICATIONS

- Xie, S., Valente, L., & Etienne, R. S.** (2023). Can we ignore trait-dependent colonization and diversification in island biogeography? *Evolution*, 77(3), 670–681. <https://doi.org/10.1093/EVOLUT/OPAD006>
- Xie, S., Valente, L., & Etienne, R. S.** (2023). Identifying summary statistics for approximate Bayesian computation in a phylogenetic island biogeography model. (BioRxiv). <https://doi.org/10.1101/2023.10.13.562305>.
- Xie, S., Valente, L., & Etienne, R. S.** (2023). Inferring state-dependent diversification rates using approximate Bayesian computation (ABC). (BioRxiv). <https://doi.org/10.1101/2023.10.14.562317>.
- Li, S.*, **Xie, S.***, Zhang, S., Miao, S., Tang, S., Chen, H. & Zhan, Q. (2022), Global patterns and controls of the soil microbial biomass response to elevated CO₂. *Geoderma*. 428 (8), 116153. <https://doi.org/10.1016/j.geoderma.2022.116153>
(* equally contributed to this work).
- Li, J., **Xie, S.**, Wilson, G. W. T., Cobb, A. B., Tang, S., Guo, L., Wang, K. & Deng, B. (2019), Plant-microbial interactions facilitate grassland species coexistence at the community level. *Oikos*. 129 (4), 533-543.
<https://doi.org/10.1111/oik.06609>
- Zhang, Y., Tang, S., **Xie, S.**, Liu, K., Li, J., Chen Q., Huang D., Wang, K. (2019), Effects of species-dominated patches on soil organic carbon and total nitrogen storage in a degraded grassland in China. *PeerJ* 7:e6897
<https://doi.org/10.7717/peerj.6897>
- Tang, S., Guo, J., Li, S., Li, J., **Xie, S.**, Zhai, X., Wang, C., Zhang, Y., Wang, K. (2019), Synthesis of soil carbon losses in response to conversion of grassland to agriculture land. *Soil and Tillage Research* 185, 29-35.
<https://doi.org/10.1016/j.still.2018.08.011>

PRESENTATIONS

Seminar talk: Can we ignore trait effects in island biogeography? Groningen, the Netherlands. (2023)

Conference talk: Approximate Bayesian Computation in island biogeography models. Mathematical Models in Ecological and Evolution (MMEE), Reading, the UK. (2022)

Poster: Effect of trait dynamics on diversification rates in insular systems. Early Career Biogeographers Conference (ECBC), Amsterdam, the Netherlands. (2021)

Poster: The robustness of a simple island biogeography model with trait effects. Meeting of the Dutch Society for Evolutionary Biology (NLSEB), Ede, the Netherlands. (2021)

TECHNICAL SKILLS

Methods: Maximum likelihood estimation; Theoretical modelling in ecology and evolution; Bayesian inference using Markov Chain Monte Carlo and Approximate Bayesian Computation; Phylogenetic comparative methods; Meta-analysis

Tools: R; C++; Mathematica; High-performance computer (HPC) cluster; SPSS; SAS

Field Work: Soil and plant biomass sampling

Lab Work: Spectroscopy; Gas chromatograph; Plant and soil physiochemical analysis

TEACHING EXPERIENCE

Teaching Assistant at the University of Groningen:

- Evolutionary Processes (Computer practical on trait evolution and island biogeography). (2020, 2021)
- Mathematics in the Life Sciences. (2019, 2020)
- Biological Modelling and Model Analysis (Computer practical). (2019, 2020)

HONORS AND AWARDS

- First-class outstanding student scholarship (2015, 2016, 2017)
- Excellent graduate of China Agriculture University (2016)
- CAU Merit Student (2015)
- The Jin Zhengda Scholarship (2015)
- National Encouragement Scholarship (2013, 2014)

SOCIETY MEMBERSHIP

Society for the Study of Evolution (SSE). (2021, 2023)

Dutch Society for Evolutionary Biology (NLSEB). (2021)