

Miao He | Curriculum Vitae

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EDUCATION

Doctor of Philosophy (PhD)

University of Minnesota, Ecology, Evolution and Behavior program

Saint Paul, the United States (US)

2023.09–Present

- Advisor: Forest Isbell
- Current GPA: 4.0/4.0

Masters of Biological Sciences/Biosciences

Utrecht University, Environmental Biology program

Utrecht, the Netherlands(NL)

2021.09–2023.05

- GPA: 8.66/10
- U/SELECT Honor program

Bachelor of Science

East China Normal University (ECNU), Ecology major

Shanghai, China (CH)

2017.09–2021.07

- GPA:3.7/4.0 (89.97/100)
- Graduate with distinction

RESEARCH EXPERIENCE

University of Minnesota, Twin Cities

Ecosystem dynamic under long-term nutrient enrichment and after its cessation

Saint Paul, US

Advisor: Forest Isbell

2022.12–2023.05

- Using the data from long term nitrogen addition experiment at Cedar Creek, explored the dynamics of plant biodiversity and ecosystem productivity to 40-year nitrogen enrichment and after its cessation for more than 30 years
- Explored to what extent will diversity and productivity recover and to what extent are those recoveries explained by the changes of community composition

Utrecht University

Landscape rehabilitation with shade coffee agroforestry in Peru

Utrecht, NL

Advisor: Pita Verweij

2022.09–2022.12

- Together with Nerea Rubio Echazarra, Jelyn Gerkema, Katherine Mihalczko, Annika Nugteren, and Leonardo Veglia, designed and developed a sustainable coffee agroforestry system with a long-term implementation plan, in order to biophysically and economically restore the degraded landscape in Peru
- This agroforestry system is a community-based natural resources management project, which is an assignment for Management of natural resources in context

The impacts of nutrient enrichment on grassland overyielding

Utrecht, NL

Advisor: Yann Hautier, Merel Soons, Kathryn Barry

2021.09–Present

- Synthesized data from biodiversity experiments with N addition treatment
- Analyzed the impact of cumulative nitrogen addition with mixed linear effect model
- Manuscript is currently under view on *Communications Biology*

Chinese Academy of Science

The optimization of camera traps survey design

Beijing, CH

Advisor: Xiaoli Shen, Sheng Li

2020.10–2021.12

- Simulated data from camera traps survey in 3 protected areas of China (Qianjiangyuan, Laohegou, Anziher)
- Modeled the possible detected richness proportion and survey effort under different scenarios (camera numbers and duration)
- Explored the regulation of survey starting date, grid size as well as the population dynamic of target season

The population dynamic of black muntjac (*Muntiacus crinifrons*)

Beijing, CH

Advisor: Keping Ma, Xiaoli Shen

2020.05–2020.10

- Generated detection history data from infrared cameras trap photos in Qianjiangyuan National Nature Reserve
- Assessed population dynamic of preserved animals with Occupancy Model and N-mixture Model based on *unmarked* packages
- Combined environmental covariance with distribution data to explore wildlife spatial pattern

East China Normal University

The impacts of grazing and global change on grassland BEF

Shanghai, CH

Advisor: Xuhui Zhou, Funding: National Undergraduate Innovation Project

2018.10–2021.06

- Synthesized data from field experiments with treatment(s) of grazing and global change factors
- Conducted meta-analysis of biodiversity-ecosystem functioning relationships under interactive effects of grazing and global change factors
- Manuscript was published on *Global Change Biology* (2022)

Machine learning for plant-recognition based on leaf traits

Shanghai, CH

Advisor: Guochun Shen, Funding: National Undergraduate Innovation Project

2019.10–2020.10

- Processed herbarium image data provided by Chinese Academy of Sciences
- Prepared training and validation datasets for Convolutional Neural Networks using *TensorFlow* package
- The model is currently under development with other traits

The impacts of grazing on C:N:P stoichiometry

Shanghai, CH

Advisor: Xuhui Zhou

2018.06–2019.10

- Hypothesized that grazing intensity might differently change C:N:P stoichiometry and synthesized related data from field experiments
- Conducted meta-analysis of C:N:P stoichiometry of different ecosystem parts and their response to grazing intensities.
- Manuscript was published on *Global Ecology and Biogeography* (2020)

The impacts of N and P fertilization on soil and microbial respiration

Shanghai, CH

Advisor: Zemei Zheng

2018.07–2019.01

- Assisted the process of soil respiration data
- Revised the manuscript published on *Forest Ecology and Management* (2019)

The interactive effects of grazing and global change on ecosystem respiration

Shanghai, CH

Advisor: Xuhui Zhou

2017.11–2018.10

- Assisted the data synthesis from field experiments that measures soil respiration
- Revised the two manuscripts published on *Global Change Biology* (2018) and *Journal of Applied Ecology* (2019)

PUBLICATIONS

He, M., Soons, M. B., Barry, K. E., Isbell, F., Allan, E., Cappelli, S. L., Pichon, N., Mason, N., Roscher, C., Lanta, V., Lepš, J., Doležal, J., Pontes, L. D. S., Palmberg, C., Connolly, J., Kirwan, L., Craven, D., Reich, P., & Hautier, Y. (under review) Cumulative nitrogen enrichment alters the drivers of grassland overyielding.

He, M., Pan, Y., Zhou, G., Barry, K. E., Fu, Y., & Zhou, X. (2022). Grazing and global change factors differentially affect biodiversity-ecosystem functioning relationships in grassland ecosystems. *Global Change Biology*, **28**, 5492–5504

He, M., Zhou, G., Yuan, T., van Groenigen, K. J., Shao, J., & Zhou, X. (2020). Grazing intensity significantly changes the C: N: P stoichiometry in grassland ecosystems. *Global Ecology and Biogeography*, **29**, 355–369

Zhou, G., Luo, Q., Chen, Y., Hu, J., **He, M.**, Gao, J., Hu, J., & Zhou, X. (2019). Interactive effects of grazing and global change factors on soil and ecosystem respiration in grassland ecosystems: a global synthesis. *Journal of Applied Ecology*, **56**, 2007–2019

Liu, H., Zhou, G., Bai, S. H., Song, J., Shang, Y., **He, M.**, Wang, X., & Zheng, Z. (2019). Differential response of soil respiration to nitrogen and phosphorus addition in a highly phosphorus-limited subtropical forest, China. *Forest Ecology and Management*, **448**, 499–508

Zhou, G., Luo, Q., Chen, Y., **He, M.**, Zhou, L., Frank, D., He, Y., Zhang, B., & Zhou, X. (2018). Effects of livestock grazing on grassland carbon storage and release override impacts associated with global climate change. *Global Change Biology*, **25**, 1119–1132

PRESENTATIONS

Oral presentation

ECNU Annual Innovation Conferences: The impacts of grazing and global change on grassland BEF 2019.12

MW-CASC October Science Seminar: Nitrogen enrichment alters the drivers of grassland overyielding 2023.10

Poster presentation.....

Netherlands Annual Ecology Meeting: The impacts of nutrient enrichment on grassland overyielding 2022.09

European Geosciences Union General Assembly: The impacts of grazing on C:N:P stoichiometry 2019.04

ACADEMIC SERVICES

Manuscript reviewer for journals.....

Ecology and Evolution: 2 2023

Outreaching.....

Focus Scientist for "Biology Saves the World" Project Minneapolis, US
University of Minnesota, Twin Cities 2023.03

- This project aims to build excitement with 1st year undergraduate students about ways that the biological sciences address global challenges and help impact the world
- Shared my career path, scientific work and its impact and potential applications

Teaching.....

Guest Lecturer for Biodiversity and Conservation Biology Saint Paul, US
Hamline University 2023.03

- Gave a lecture on climate change and other threats to biodiversity
- Designed a hands-on project, grouped students into 3 stakeholders to use problem/solution tree for conservation project planning

Teaching assistant for Landscape Ecology Shanghai, CH
East China Normal University 2020.03–2020.07

- Assisted with the arrangement of online lectures and assignments for the course given by Yongli Cai and Dingliang Xing

NON-ACADEMIC EXPERIENCE

Graduate student representative for Cedar Creek LTER site (CDR LTER) Saint Paul, the United States
The Long Term Ecological Research (LTER) Graduate Student Committee 2024.1–present

- Foster interaction among graduate students working at LTER sites and between students and senior LTER scientists
- Create student opportunities for inter-site research and interdisciplinary graduate student training programs

Cedar Creek DEIJ committee member Saint Paul, the United States
College of Biological Science, University of Minnesota, Twin Cities 2022.11–present

- Contribute the discussion at monthly committee meeting, develop strategies to create a more diverse and inclusive for Cedar Creek community

Social Media Operations (Freelancer) Shanghai, CH
Springer Nature Group, Research Marketing Operations Department 2020.09–2023.06

- Daily operation of social media platforms of Springer Nature, including but not limited to WeChat and Weibo
- Support other work items related to social marketing

Private tutor Fujian & Shanghai, CH
Self-employment 2017.07–2018.12

- Gave one-on-one lectures on English and Physics to high school students

GRANTS, FELLOWSHIPS and AWARDS

Graduate Period.....

University of Minnesota, the Interdisciplinary Center for the Study of Global Change: ICGC Fellowship 2023

Utrecht University, U/Select Honour program: Funding for abroad research 2022

University of Minnesota, Isbell biodiversity lab: Funding for research internship 2022

Chinese Academy of Science, Biodiversity and Biosafety Group: Funding for research internship 2021

Undergraduate Period (East China Normal University).....

Outstanding student scholarship (8,000 CNY, twice) 2018, 2020

Grant for national innovation undergraduate research project (10,000 CNY, twice) 2018, 2020

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| "Daxia Cup" award for academic performance (twice) | 2018, 2020 |
| National encouragement scholarship (5,000 CNY) | 2020 |
| National "Internet plus" innovation and entrepreneurship competition, third prize | 2020 |
| National college students mathematical modeling competition, third prize | 2018 |

SKILLS

Languages.....

Spoken languages

- Native: Mandarin, Hokkien
- Advanced: English (TOFEL: 108/120)
- Basic: Dutch

Programming languages

- Advanced: R
- Good: Python, Matlab, SQL
- Basic: C#

Softwares.....

- Spatial analysis: ArcMap, ENVI, Fragstats
- Visualization: SigmaPlot, Adobe Illustrator, Adobe Photoshop
- Others: L^AT_EX, Github, SQL Server, MEGA-X(Genetics Analysis)

INTERESTS

- Piano: Amateur level 10/10
- Movie: A blog with reviews for 937 movies and 145 books (in Chinese): <https://www.douban.com/people/202256853/>
- Journal club channel (in Chinese): <https://space.bilibili.com/4671324/>
- Others: Museum hunting, puzzling, cardio exercise