QIANG YANG

My research interests lie broadly in community ecology and macroecology, in particular in biodiversity, ecosystem functioning, and stability. I am fascinated by the nature of the relationships among these properties, how they scale tropically and spatially, and how they are regulated by environmental change and human activities.

EDUCATION & RESEARCH

02/2022 | ?

German Centre for Integrative Biodiversity Research (iDiv)
Postdoctoral researcher — Leipzig, Germany

Project: Synthesizing changes in plant pollinator networks across environmental gradients.

05/2018 | 01/2022

University of Konstanz
Postdoctoral researcher — Konstanz, Germany

Project: The redistribution of global floristic diversity by naturalized alien plants. The uniqueness of the regional species assemblage is losing due to human-facilitated exchanges of alien species. Plants form the foundation of primary productivity of terrestrial ecosystems, and ultimately determine the biodiversity and functions of the system. However, to what extent global floras have lost their uniqueness by alien species has not been quantified at the global scale yet, and we also do not know how much human activities and climate change have contributed to the loss. This project aims to identify the temporal and spatial patterns in floristic uniqueness loss due to naturalization of alien plants, and investigate the biogeographic and anthropogenic drivers underlying these patterns.

2018

Trinity College Dublin
PhD in Ecology — Dublin, Ireland

Thesis: The multidimensionality of ecological stability. During my PhD study, I 1) used theoretical simulations of network dynamics to investigate how different stability components and the relationship between them are regulated by the intensity of external perturbations, 2) explored the effect of the environmental autocorrelation and correlation on the predictability of various components of ecological stability and 3) verified empirically the decoupling effect of perturbations on the relationship between ecological stabilities using the dataset of the NutNet - a global grassland experimental system.

CONTACT INFO

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R PACKAGE

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DATA SKILLS

Advanced level in R, Bash, and Git

Classic statistical analysis using GLMMs, GAMMs, SEM

Dimensionality reduction and ordinations in ecology

Species distribution modelling

Network simulation and analysis

2012 **Institute of Hydrobiology, Chinese Academy of Sciences**
M.S. in Hydrobiology — Wuhan, China

Thesis: Formation and hydrological control of diatom blooms in Hanjiang River. I investigated the effect of climatic and hydrological conditions on the formation of diatom blooms, and put forward a feasible strategy for algal bloom control.

2008 **Ocean University of China**
B.S. in Marine biology and environment — Qingdao, China

Thesis: The effect of the ocean current on the diffusion of marine aquaculture pollutants.

TEACHING EXPERIENCE

2019 | 2021 **have been leading the Ecology Journal Club in the Department of Biology, University of Konstanz.**

2016 | 2017 **demonstrated the course *Data Handling and Analysis* to Master students in Environmental Science and Biodiversity & Conservation, Trinity College Dublin.**

2014 **taught *Structural Equation Modeling with R* and *Data Wrangling with R* to the R Users Group in Trinity College Dublin.**

2012 **taught *ANOVA and Community Ordination Analysis* to first-year postgraduates in Donghu Experimental Station for Lake Ecosystem, Chinese Academy of Science.**

AWARDS & SCHOLARSHIPS

2017 **Innovation in Sustainability Science Award by Ecological Society of America**
The award is given to the authors of a peer-review paper published in the past five years that exemplifies leading edge work on solution pathways to sustainability challenges.

2013 **Government of Ireland Postgraduate Fellowship by Irish Research Concil**
Scholarship covering my PhD study.

2012 **Chang Hua Award by Chinese Academy of Sciences**
Awarded for research performance.

2012 **Hai Da Award by Chinese Academy of Sciences**
Awarded for research performance.

2012 **Di Ao Award by Chinese Academy of Sciences**
Awarded for research performance.

PUBLICATION

Kinlock NL, et al. (2022) Indirect effects of introduction history on the naturalization success of cultivated species in Great Britain.
Global Ecology and Biogeography 31: 1104–1119.

- **Omer A, Fristoe T, Yang Q, Maurel N, Weigelt P, et al. (2021) Characteristics of the naturalized flora of Southern Africa largely reflect the non-random introduction of alien species for cultivation.**
  Ecography 44: 1812-1825.
- **Yang Q, Weigelt P, Fristoe T, Zhang Z, Kreft H, et al. (2021) The global loss of floristic uniqueness.**
  Nature Communications 12: 7290.
- **Pouteau R, Thuiller W, Hobohm C, Brunel C, Conn BJ, et al. (2021) Climate and socio-economic factors explain differences between observed and expected naturalization patterns of European plants around the world.**
  Global Ecology and Biogeography 30: 1514-1531.
- **Pouteau R, Biurrun I, Brunel C, Chytrý M, Dawson W, et al. (2021) Potential alien ranges of European plants will shrink in the future, but less so for already naturalized than for not yet naturalized species.**
  Diversity and Distributions 27: 2063-2076.
- **Fristoe TS, Chytrý M, Dawson W, Essl F, Heleno R, et al. (2021) Dimensions of invasiveness: Links between local abundance, geographic range size, and habitat breadth in Europe's alien and native floras.**
  Proceedings of the National Academy of Sciences 118: e2021173118.
- **White L, O'Connor NE, Yang Q, Emmerson MC, Donohue I (2020) Individual species provide multifaceted contributions to the stability of ecosystems.**
  Nature Ecology & Evolution 4: 1594-1601.
- **van Kleunen M, Xu X, Yang Q, Maurel N, Zhang Z, et al. (2020) Economic use of plants is key to their naturalization success.**
  Nature Communications 11: 1-12.
- **Shoemaker LG, Sullivan LL, Donohue I, Cabral JS, Williams RJ, et al. (2020) Integrating the underlying structure of stochasticity into community ecology.**
  Ecology 101: e02922.
- **Yang Q, Fowler MS, Jackson AL, Donohue I (2019) The predictability of ecological stability in a noisy world.**
  Nature Ecology & Evolution 3: 251-259.
- **Donohue I, Petchey OL, Kéfi S, Génin A, Jackson AL, Yang Q, O'Connor NE. (2017) Loss of predator species, not intermediate consumers, triggers rapid and dramatic extinction cascades.**
  Global Change Biology 23: 2962-2972.
- **Shi P, Shen H, Wang W, Yang Q, Xie P (2016) Habitat-specific differences in adaptation to light in freshwater diatoms.**
  Journal of applied phycology 28: 227-239.
- **Donohue I, Hillebrand H, Montoya JM, Petchey OL, Pimm SL, et al. (2016) Navigating the complexity of ecological stability.**
  Ecology letters 19: 1172-1185.
- **Zhang D, Yang Q, Xie P, Deng X, Chen J, et al. (2012) The role of cysteine conjugation in the detoxification of microcystin-LR in liver of bighead carp (Aristichthys nobilis): a field and laboratory study.**
  Ecotoxicology 21: 244-252.
- **Yang Q, Xie P, Shen H, Xu J, Wang P, et al. (2012) A novel flushing strategy for diatom bloom prevention in the lower-middle Hanjiang River.**
  Water Research 46: 2525-2534.

- **Xu J, Yang Q, Zhang M, Zhang M, Xie P, et al. (2011) Preservation effects on stable isotope ratios and consequences for the reconstruction of energetic pathways.**
  Aquatic Ecology 45: 483-492.

MANUSCRIPTS IN REVIEW/PREPARATION

- **Omer A, et al. Darwin's naturalization conundrum disentangled: the role of phylogenetic relatedness depends on the invasion stages.**
  Nature Plants (under review)
- **Yang Q, et al. Effects of nutrient perturbations on the multidimensionality of ecological stability of global grasslands.**
  In preparation, target journal (Nature Ecology & Evolution)
- **Yang Q, et al. Higher perturbation intensities decouple correlation between stability components of ecological networks.**
  In preparation, target journal (Ecology)
- **Fan S, et al. The global test of Darwin's naturalization conundrum along latitude gradients.**
  In preparation, target journal (Nature Ecology & Evolution)
- **Csergő A, et al. Spatial phenotypic variability is higher between island- than mainland populations worldwide.**
  In preparation, target journal (Ecology Letters)

CONFERENCE & SYMPOSIUM TALKS

2020 **The global loss of floristic uniqueness**
GfÖ Macro2020 — Konstanz, Germany

2019 **Global homogenization of flowering plants by naturalized species**
15th International Conference on Ecology and Management of Alien Plant invasions — Prague, Czech Republic

2019 **Global homogenization of flowering plants**
International Conference on Current and Emerging Topics in Global Change Ecology of Plants — Taizhou, China

2017 **Perturbation intensity and the stability of ecological networks**
Annual Meeting of Ecological Society of America. — Portland, United States

2016 **Stronger perturbations increase the complexity of ecological stability**
British Ecological Society Annual Meeting. — Edinburgh, United Kingdom

2016 **The effect of environmental stochasticity on ecological stability**
Trinity College Dublin Zoology and Botany Postgraduate Symposium — Dublin, Ireland

2015 **The effect of perturbation intensity on ecological stability**
Trinity College Dublin Zoology and Botany Postgraduate Symposium — Dublin, Ireland

2014 **Multidimensionality of ecological stability**
Trinity College Dublin Zoology and Botany Postgraduate Symposium — Dublin, Ireland

CONFERENCE ORGANIZING

2020

GfÖ Macro2020

together with Trevor Fristoe and Mialy Harindra Razanajatovo

Konstanz, Germany