

David Y. Shen

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Education

- University College London (UCL)** London, UK
• *MSci Biodiversity and Conservation - First-class honours* September 2017 - June 2021
Courses include: Computational Biology, Animal Biodiversity, Ecological Pattern and Processes, Plant Evolution and Ecology, Dynamic Biological Systems
- University of Queensland** Brisbane, Australia
• *Study abroad program - GPA 6.33 / 7* July 2019 - July 2020
Courses include: Conservation and Wildlife Biology, Macroecology and Biogeography, Landscape Ecology

Professional Experience

- Spatial Scientist** Natcap Research, UK
• *Nature Engine Team (Full-time)* August 2022 - Present
 - Natural capital modelling:** Built models of ecosystem and biodiversity related services around the world for corporate entities to use to assess their biodiversity impact
 - Impact assessment:** Built models and metrics that measure the direct impact agricultural activities have on landscapes and biodiversity to inform mitigation strategies or risk assessment
 - Regulatory alignment:** Models and metrics are aligned to major regulatory frameworks, including the EU's Corporate Sustainability Reporting Directive (**CSRD**), Taskforce on Nature related Financial Disclosures (**TNFD**), and Science Based Targets Network (**SBTN**)
- Postgraduate Research Associate** Yale University, USA
• *Spatial Modelling Team (Full-time)* August 2021 - July 2022
 - Biodiversity Maps:** Produced high-resolution 1km² species distribution models for North America for over 4000 species to support the US federal government's effort to conserve 30% of US land area by 2030
 - Workflow parallelisation:** Used high performance computing clusters at Yale and a cloud-based architecture on Microsoft Azure to massively parallelise our workflow
 - Independent Research:** Explored how our biodiversity models may reveal insights into the importance of different environmental conditions for species occurrence. Also explored how graphical models may be used to incorporate biotic interactions in species occupancy models

Research Experience

- MSci Extended Research Project (Advisor: Prof. Richard Pearson) - UCL:** Modelled current and future distributions of the mopane worm (*Gonimbrasia belina*) with the aim of understanding how climate change influences its ecosystem services. Used Bayesian networks to incorporate biotic interactions into the species distribution models. My models predicts substantially more decline than previously predicted, with major implications for ecosystem services provided by the mopane worm. (September 2020 - June 2021)
- Field Assistant - UCL:** Assisted UCL students with their research projects and assisted the course organisers in running the 1-week course at the Blakeney Point Research Station. Gained management and planning experience and fieldwork skills. (September 2018)
- Research Assistant - Big Wasp Survey - UCL:** Contributed to wasp specimens taxonomic identification from across the UK as part of the Big Wasp Survey project. Gained species identification and microscopy skills. (October 2018)

Skills Summary

- Languages:** Geospatial and biodiversity modelling in R and Python, shell scripting
- Scientific computing:** Metaflow, Slurm and OpenPBS, Git, Docker containers, Linux, Windows Subsystem for Linux, Cloud computing on Microsoft Azure, Amazon Web Services, S3 Object Storage
- Tools:** RStudio, GitHub, Terra and Raster R packages for spatial data, Rasterio and Geopandas Python packages for spatial data, QGIS
- Other skills:** Competent terrestrial and marine field skills in observational and manipulative experiments

Publications and Conferences

- Research article:** Shen, D.Y., Ferguson-Gow, H., Groner, V., Munyai, T.C., Slotow, R., and Pearson, R.G. 2023. *Potential decline in the distribution and food provisioning services of the mopane worm (Gonimbrasia belina) in southern Africa*. *Frontiers of Biogeography*. doi.org/10.21425/F5FBG59408.
- Research article:** Williams, J., Groner, V., Ferguson-Gow, H., Munyai, T., Mabhaudhi, T., Shen, D.Y., Slotow, R., Pearson, R., *The resilience of biodiversity's benefits for subsistence farmers in South Africa*. In prep for submission.
- Research article:** Winner, K.*, Ingenloff, K.*, Sandall, E.*, Sica, Y.*, Marsh, C.*, Cohen, J.*, Ranipeta, A.*, Killion, A.*, ... Shen, D. Y., ..., Jetz, W., *High resolution species distribution models of North American biodiversity*. In prep for submission.
* denotes equal coauthors
- Conference Poster:** Shen, D.Y., Groner, V., Ferguson-Gow, H., Munyai, T.C., Slotow, R., and Pearson, R.G. *Potential decline in the distribution and food provisioning services of the mopane worm (Gonimbrasia belina) in southern Africa*. Poster presentation for the British Ecological Society Annual Meeting, December 2021. Runner up for the Student Poster Prize - awarded £100. Poster presentation for the International Biogeography Society Biannual Meeting, June 2022. Best Poster - awarded \$100.

Volunteer Experience

- **Seminar Committee - Yale Center for Biodiversity and Global Change** Yale University, USA
Selected speakers and organised seminars for the spring and summer semesters August 2021 - July 2022
- **Academic Secretary - UCL Biology Society** UCL, UK
Organised seminars, educational workshops, administration and merchandising. September 2020 - June 2021
- **Social Secretary - UCL Karate Club** UCL, UK
Hosted social events, club administration and branding September 2018 - June 2019

Professional Affiliations

- **British Ecological Society** - Member
- **International Biogeography Society** - Member

References

Available upon request