

David Y. Shen

LinkedIn: [linkedin.com/in/dyshen](https://www.linkedin.com/in/dyshen)

Github: github.com/davidyshen

Email: david.shen@bio.au.dk

Web: www.davidshen.co.uk

Mobile: +44 7549348758

Education

- **Aarhus University** Aarhus, Denmark
PhD in Biology July 2024 - Present
Center for Sustainable Landscapes Under Global Change - Advisor: Prof. Signe Normand
- **University College London (UCL)** London, UK
MSci Biodiversity and Conservation - First-class honours September 2017 - June 2021
- **University of Queensland** Brisbane, Australia
Study abroad program - GPA 6.33 / 7 July 2019 - July 2020

Professional Experience

- **Spatial Scientist** Natcap Research, UK
Nature Engine Team (Full-time) August 2022 - June 2024
 - **Impact and risk monitoring:** Built metrics to detect business impact and dependencies on ecosystems and biodiversity, including land use change, habitat fragmentation and carbon sequestration
 - **Value chain impact assessment:** Led development of method to attribute environmental impact of high impact commodities using regional input output models to infer sourcing
 - **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. This project has since been published in the *Frontiers of Biogeography* journal (see Publications and Conferences) (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.
- **News article:** Truscott, R., *Southern African caterpillar that feeds millions may be next climate casualty*. Mongabay. Interviewed for a news article based on my research. <https://news.mongabay.com/2023/06/southern-african-caterpillar-that-feeds-millions-may-be-next-climate-casualty/>
- **Research article:** Jenkins, R., ... **Shen, D. Y.** ... Wilebore, B., *Robust metrics for identifying ecologically sensitive locations and nature-related impacts in the energy sector*. In prep for submission.
- **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.
- **Conference Talk:** **Shen, D. Y.**, Zellweger, F., Eberz, S., Wilebore, B. *GEDI predicts less than expected aboveground forest biomass in Ghana: implications for modelling carbon storage and forest restoration*. Oral presentation for the International Biogeography Society Biannual Conference in Prague, January 2024.

Leadership and Public Engagement

- **Seminar Committee - Center for Biodiversity and Global Change - Yale University:** I was member of the panel to select and invite speakers, and organise events for the Yale BGC for the spring and summer semesters. This involved setting up online seminar sessions and inviting some to visit the center in person. (August 2021 - July 2022)
- **Academic Secretary - Biology Society - UCL:** I organised a monthly seminar series with speakers from around the world to present their research to the Biology Society audience. I led educational workshops for statistics and R for other undergraduates. I also assisted with administrative tasks, and led on organising merchandising for the 2020 - 2021 year. (September 2020 - June 2021)
- **Social Secretary - Karate Club - UCL:** I organised regular social events for other members, as well as assisted with club administration with the students union, represented the club at freshers fair, and led on the visual rebranding of the club. (September 2018 - June 2019, January 2024 - May 2024)

Professional Affiliations

British Ecological Society - Member

International Biogeography Society - Member