

Quinn Asena

Data Scientist & Ecologist

Cary Institute of Ecosystem Studies

Forest Futures Lab, Millbrook, NY

CONTACT

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in [LinkedIn](#)

LAB AFFILIATIONS

[Forest Futures Lab](#)

Cary Institute

[Williams Paleoecology](#)

UW-Madison

[Perry Lab](#)

U. Auckland

[Neotoma Paleoecology DB](#)

Leadership Council

SKILLS & TOOLS

R · Python · C++ · Bash · Slurm/
PBS · HPC · Git · SQL · Apache
Arrow

INTERESTS

Classical piano · Rock climbing
· Art

RESEARCH INTERESTS

I am an **ecologist and data scientist** focused on how ecosystems change over time and space, and on building the data infrastructure needed to study them. My current work includes deep learning methods for **wildfire risk mapping**, and process-based **landscape simulation** with CMIP6 climate scenarios on HPC systems to project forest biodiversity change. My background spans palaeoecology, contemporary ecosystem modelling, and the statistical and computational methods that link the two.

PROFESSIONAL EXPERIENCE

Data Scientist

Cary Institute of Ecosystem Studies

Millbrook, NY

2025 – Present

- Automated HPC workflows for process-based landscape simulations across boreal North America under multiple CMIP6 climate scenarios.
- Large-scale data management using SQL and Apache Arrow; integration of climate, soil, and elevation data from distributed archives (NASA DAACs, STAC).
- Developed an interactive interface for collaborators to query simulation outputs and generate visualisations.

Postdoctoral Research Associate

University of Wisconsin-Madison

Madison, WI

2022 – 2024

- NSF-funded project developing state-space modelling methods to analyse palaeoecological records.
- Abrupt change in ecosystems project led by Jack Williams and Anthony Ives.

Engagement Specialist

Centre for eResearch - University of Auckland

Auckland, NZ

2021 – 2022

- Delivered seminars on data management, FAIR and CARE principles, and reproducible workflows; provided research-computing support for graduate students and research staff (virtual machines, data storage, analytical workflows).
- Technical skills: Linux, Bash, Slurm, HPC, and version control.

Data Analyst

Auckland Council

Auckland, NZ

2021

- Analysed citizen science bird count data and produced a technical report.

RESEARCH EXPERIENCE

Research Assistant

University of Auckland

Auckland, NZ

2021 – 2022

- Conducted a bibliometric analysis on the topic of climate justice.

Research Assistant

Stockholm Environment Institute

York, UK

2016 – 2017

- Reconstruction of fire regimes in the North York Moors.
- Microscope analysis and core preparation for charcoal and spheroidal carbonaceous particles.

TEACHING EXPERIENCE

PhD Student Mentor

SUNY

Virtual

2025

- One-on-one mentoring in statistics for palaeoecology.

Graduate Teaching Assistant & Assistant Coordinator

University of Auckland

Auckland, NZ

2018 – 2020

- Assistant coordinator for Discovering Environmental Modelling.
- Guest lecturer on population growth. Developed a [Shiny application](#) as a lecture aid.
- GTA for: Natural and Human Environmental Systems; Discovering Environmental Modelling; Environmental Science and Management.

EDUCATION

PhD, University of Auckland

School of Environment

Auckland, NZ

2017 – 2021

- Explored virtual ecological methods for generating pseudoproxy data to assess statistical inferences under data uncertainty.
- Supervised by George Perry and Janet Wilmschurst.

MEnv. Environmental Science

University of York

York, UK

2012 – 2016

- First-class integrated master's degree in environmental science. Master's research involved environmental monitoring using sensor networks and robotics.
- Courses included: Ecological Principles; Biogeography; Applied Ecology and Environmental Management; Climate Change: Science, Observation & Impacts; Research Skills and Statistical Methods.

Geocomputation & Machine Learning for Environmental Applications

Basilicata University

Matera, Italy

2025

- Certified course in machine learning for spatial analyses.

Certified Carpentries Instructor

The Carpentries

Global (Virtual)

2023

- Certified to teach and host [Carpentries](#) workshops in data science and computational skills.

Performance Composition & Theory

Royal Academy of Music

London, UK

2005 – 2010

- Study in performance, composition, and musical theory. Multiple competition awards.
- ABRSM Grade 8 Piano Performance.
- ABRSM Grade 5 Music Theory.

PUBLICATIONS

- **Asena, Q.**, Williams, J., Johnson, J., Shuman, B., Stefanova, V., Ives, A. (2026). [Statistical analyses of ecological multinomial time series to identify environmental drivers and biotic interactions](#). *Methods in Ecology and Evolution*.
- **Asena, Q.**, Perry, G.L., Wilmschurst, J. (2026). [Information loss in palaeoecological data from process and observer error](#). *Climate of the Past*.

- Lee, F., Bellvé, A.M., Alena, H., **Asena, Q.**, Perry, G.L. (2025). [Using population viability analysis and fossil records to inform the conservation of pateke \(*Anas chlorotis*\)](#). *New Zealand Journal of Ecology*.
- **Asena, Q.**, Perry, G.L., Wilmshurst, J. (2024). [Is the past recoverable from the data? Pseudoproxy modelling of uncertainties in palaeoecological data](#). *The Holocene*.
- Parsons, M., **Asena, Q.**, Johnson, D., Nalau, J. (2024). [A Bibliometric Review and Topic Analysis of Climate Justice Literature: Mapping Trends, Voices, and the Way Forward](#). *Climate Risk Management*. Code repository publicly available.
- Courtney-Mustaphi, C.J., Brahney, J., Aquino-López, M.A., Goring, S., Orton, K., Noronha, A., Czaplewski, J., **Asena, Q.**, Paton, S. (2019). [Guidelines for Reporting and Archiving 210Pb Sediment Chronologies to Improve Fidelity and Extend Data Lifecycle](#). *Quaternary Geochronology*.
- Heinemeyer, A., Burn, W.L., **Asena, Q.**, Jones, A., Ashby, M. (2019). [Response to comment on Peatland carbon stocks and burn history](#). *GEO: Geography and Environment*.
- Heinemeyer, A., **Asena, Q.**, Burn, W.L., Jones, A. (2018). [Peatland carbon stocks and burn history: Blanket bog peat core evidence highlights charcoal impacts on peat physical properties and long-term carbon storage](#). *GEO: Geography and Environment*.
- Simpkins, C.E., Lee, F., Powers, B.F., Anderson, S., **Asena, Q.**, Brock, J.M.R., Perry, G.L. (2018). [Population viability analyses in New Zealand: a review](#). *New Zealand Journal of Ecology*.
- Hamilton, R., Brussel, T., **Asena, Q.**, Bruel, R., Marcisz, K., Słowiński, M., Morris, J. (2018). [Assessing the links between resilience, disturbance, and functional traits in paleoecological datasets](#). *Past Global Changes Magazine*, vol. 26(2), 87.

SOFTWARE & OPEN SCIENCE

multinomialTS

R package

- [R package](#) for state-space modelling of multinomially distributed ecological time-series data.

State-Space Methods for Palaeoecological Hypothesis Testing

Workshop materials

- [Open workshop materials](#) for state-space modelling of community and palaeoecological time series.

Authoring Collaborative Research Projects in Quarto

Workshop materials

- [Resources for collaborative research workflows](#) using Git, GitHub, and Quarto (ResBaz 2022–2024).

fisherR

R package

- [R package](#) for calculating Fisher's Information on ecological time-series data.

Population Growth Explorer

Shiny app

- [Interactive app](#) exploring population growth equations for undergraduate teaching.

CONFERENCES, TALKS & WORKSHOPS

Methods in Ecology and Evolution

2026

Virtual

- Talk: [multinomialTS: a state-space approach for modelling community time series](#)
- Materials: [Talk and workshop resources](#)

ESA 2026 - Ecological Society of America

2026

Salt Lake City, UT

- **Speaker:** [Assessing climate-driven compositional shifts in boreal forests using iLand](#)

- Neotoma Outreach** 2026
Virtual
- Talk: [A virtual ecological approach to modelling uncertainties in palaeoecology](#)
 - Workshop: [Hands-on workshop for age-depth modelling using Bchron](#)
- ESA 2025 - Ecological Society of America** 2025
Baltimore, MD
- **Speaker:** [Modelling palaeoecological datasets using a state-space approach: two case studies](#)
- AGU - American Geophysical Union** 2025
New Orleans, LA
- Poster: Assessing climate-driven compositional shifts in boreal forests using iLand.
- ESA 2024 - Ecological Society of America** 2024
Long Beach, CA
- **Speaker:** Hypothesis testing of the drivers of long-term ecological change in Michigan.
 - **Workshop host:** [State-space methods for testing hypotheses about environmental drivers and biotic interactions](#)
- INQUA 2023 - International Union for Quaternary Research** 2023
Rome, Italy
- **Lead Convenor:** [Data science and palaeoecology: current intersections and advances](#)
- ESA 2023 - Ecological Society of America** 2023
Portland, OR
- **Speaker:** [Modelling palaeoecological community data: a state-space approach](#)
- ResBaz - Research Bazaar** 2021 – 2025
Auckland, NZ; Madison, WI
- Organiser: ResBaz Aotearoa 2021.
 - Workshop lead: [Quarto for collaboration](#) at ResBaz NZ 2022–2024 and in-person Madison, WI, 2023.
- AGU - American Geophysical Union** 2022
Chicago, IL
- Speaker: Virtual ecological methods for assessing uncertainty in palaeoecological data using pseudo-proxies.
- AMQUA - American Quaternary Association** 2022
Madison, WI
- Poster: Virtual ecological methods for assessing uncertainty in palaeoecological data using pseudo-proxies.
- BES Palaeo in R - British Ecological Society** 2022
Virtual
- Speaker: Virtual ecological methods for assessing uncertainty in palaeoecological data using pseudo-proxies.
- INQUA 2019 - International Union for Quaternary Research** 2019
Dublin, Ireland
- Speaker: Pseudoproxy modelling for assessing statistical inferences.

- Durham University - Invited Speaker**
Durham, UK

- Modelling resilience in ecosystems.

Biological Heritage Science Challenge
University of Canterbury

Christchurch, NZ
2017 – 2019

- Speaker on resilience in ecosystems.

International Swiss Climate Summer School
University of Bern

Bern, Switzerland
2018

- Poster presentation and participant. Accredited course (3 ECTS credits).

EcoRe3: Resistance Recovery and Resilience in Long-term Ecological Systems
PAGES - University of Utah

Utah, USA
2018

- Speaker: modelling resilience in ecosystems.
- PEER REVIEW
- | | |
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| <i>Ecology Letters</i> | 2026 |
| <i>Journal of Open Source Software</i> | 2026 |
| <i>Nature Communications</i> | 2025 |
| <i>Environmental Research and Technology</i> | 2025 |
| <i>Quaternary Geochronology</i> | 2024 |
| <i>Methods in Ecology and Evolution</i> | 2022 |
- SERVICE & LEADERSHIP
- Early Career Representative**
Neotoma Leadership Council

Virtual
2024 – Present

- Early career representative on the Neotoma leadership council. Contributing to database governance, ingestion standards, and community user support for a global palaeoecological data resource.

Committee member
Computational Resources Committee

Virtual
2025 – Present

- Contributing to data infrastructure design and decisions, including security, data management, and FAIR/CARE practices.

Committee member
Postdoc, Research Associate, and Data Analyst/Data Scientist (PRADAS) committee

Virtual
2026 – Present

- Sharing information, training, and skills across the Cary PRADAS community
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