Klara K. Nordén, PhD

Curriculum Vitae

Profile summary

I am an experienced researcher with expertise across three fields intersecting biodiversity - evolutionary biology, ecology, and paleontology. I have managed and funded several research projects from start to finish, built interdisciplinary and international collaborations, and developed strong skills in data collection, analysis and presentation. As an interdisciplinary scientist, I am particularly good at distilling complex problems into key insights and communicating it effectively to a broad range of audiences and stakeholders.

Key words: data collection, statistical analysis, communication, project management, international collaboration, open science, biodiversity, evolution, ecology, geology

Education

2018–2023 **PhD Ecology and Evolutionary Biology**, *Princeton University*, Princeton, USA
Thesis title: The evolution of metallic luster in plumage
Advisor: Mary C. Stoddard

2016–2017 **MSci Palaeontology and Evolution**, *University of Bristol*, Bristol, UK
Thesis title: Were herbivorous dinosaurs declining in the Cretaceous?
Advisor: Michael J. Benton

2013–2015 **BSc Geology/Biology**, *University of Bristol*, Bristol, UK

Professional experience

January 2024-Present **Lib4RI**, *Project manager*
- Manage and contribute to part of the Open Research Data (ORD) Program funded by the ETH Domain
- Develop an online training course in open science and research data management for researchers
- Assess learning needs of the research community
- Develop a communication strategy for the project

Fall 2023 **European Commission**, *Bluebook Trainee*
- Develop solutions and streamline the application process for researchers applying to EU funding
- Assist in the processing of grant applications for EU funding

Research

2018-2023 **Princeton University**, *Doctoral researcher*

- Design, fund, and implement a 5-year research programme in evolutionary biology
- Explore the evolution of structural colour in birds using phylogenetic methods, spectrophotometry, optical modelling and microscopy
- Build and lead international research collaborations
- Write reports, grant applications, and give presentations on output to stakeholders and at international conferences
- Build skills in various highly technical areas: electron microscopy, microbiological laboratory techniques, photonics, Bayesian modelling, image analysis, colour quantification, visual modelling, phylogenetic comparative methods

2014-2017 **University of Bristol**, *Graduate researcher*

- Develop a research project in paleobiology on ecosystem turnover
- Create and analyse a large database of fossil characters and geological time series
- Conduct macroevolutionary analyses of phylogenetic and morphometric data
- Perform chemical analysis (enzymatic extraction of pigments)
- Write scientific papers and present results at conferences

Teaching and mentoring

2019-2021 **Princeton University**, *Assistant in instruction*

- Teach and lead two laboratory exercise classes per week for an introductory biology course with over 100 students
- Lead discussion sessions with students in topics of ecology, conservation, and sensory biology

Summer 2021 **Princeton University**, *Mentor*, Bogle Fellowship

Supervised 8-week project to design a website housing the digitized "Charles Rogers bird journals" – a collection of bird observations from 1899-1972 by the late Princeton University curator Charles Rogers.

Technical skills

Methods Inferential statistics, data wrangling, supervised machine learning (regression, linear discriminant analysis, k-nearest neighbour), clustering algorithms (principal component analysis, k-means clustering), image analysis (blob detection)

Tools R, MATLAB, OpenRefine, Adobe Photoshop, InkScape, Microsoft Office Suite, ArcGIS

Leadership & teamwork experience

Summer 2021 **Specimen Stories**, *Podcast*

- Created and produced a science communication podcast
- The podcast has an audience across 31 countries and received over 100 downloads in its first 2 weeks

2020-2021 **Digitization of Princeton Natural History Collection**, *Project leader*

- Lead project to digitize the collections of over 6000 objects to increase its use by researchers and the public
- Interviewed museum professionals, researched database structures and conducted an inventory of the collections to asses the current state and plan the implementation of a digitization
- Raised interest in the collections by conducting tours for students and university leaders

2020-2021 **Diverse careers in science**, *Seminar creator and organizer*

- Launched a seminar for Princeton graduate students interested in careers outside academia
- Invited an led discussions with 21 guests over one year from a range of organizations, agencies and companies (e.g. WWF, WHO, European Commission, Facebook)
- The seminar is now implemented in a funded careers programme at the department

2019-2020 **Princeton University Women in Science Programme**, *Leader*, Princeton University, Princeton, USA
Organized events and lead discussions related to issues facing women in academia

Spring 2017 **Bristol Dinosaur Project**, *Volunteer*, University of Bristol, Bristol, UK
Programme to foster science education in primary schools, with focus on Earth Science/paleontology. Activities include workshops and interactive presentations to learn about fossils and paleontology, but also broader topics such as evolutionary biology and climate change.

Languages

Languages Swedish (native), English (fluent), German (B1)

Publications

1. Klara K Nordén, Christopher R. Cooney, Frane Babarovic, and Mary Caswell Stoddard. Historical contingency influences the diversity of feather nanostructures in cuckoos. *Preprint, Nature Communications (in revision)*, 2023.

2. Kristina Fialko, Jarome R Ali, Laura Céspedes Arias, Jacob Drucker, Klara K Nordén, Trevor Price, Rosalyn Price-Waldman, and Stephen Pruett-Jones. The sensory ecology of birds. *The Auk*, 138(2):320, 2021.

3. Klara K Nordén, Chad M Eliason, and Mary Caswell Stoddard. Evolution of brilliant iridescent feather nanostructures. *eLife*, 10:e71179, 2021.

4. Klara K Nordén, Jaeike W Faber, Frane Babarović, Thomas L Stubbs, Tara Selly, James D Schiffbauer, Petra Peharec Štefanić, Gerald Mayr, Fiann M Smithwick, and Jakob Vinther. Melanosome diversity and convergence in the evolution of iridescent avian feathers—implications for paleocolor reconstruction. *Evolution*, 73(1):15–27, 2019.

5. Klara K Nordén, Thomas L Stubbs, Albert Prieto-Márquez, and Michael J Benton. Multifaceted disparity approach reveals dinosaur herbivory flourished before the end-cretaceous mass extinction. *Paleobiology*, 44(4):620–637, 2018.

6. Klara K Nordén and Trevor D Price. Historical contingency and developmental constraints in avian coloration. *Trends in ecology & evolution*, 33(8):574–576, 2018.

7. Luke A Parry, Fiann Smithwick, Klara K Nordén, Evan T Saitta, Jesus Lozano-Fernandez, Alastair R Tanner, Jean-Bernard Caron, Gregory D Edgecombe, Derek EG Briggs, and Jakob Vinther. Soft-bodied fossils are not simply rotten carcasses–toward a holistic understanding of exceptional fossil preservation: exceptional fossil preservation is complex and involves the interplay of numerous biological and geological processes. *BioEssays*, 40(1):1700167, 2018.

8. D Cary Woodruff, Thomas D Carr, Glenn W Storrs, Katja Waskow, John B Scannella, Klara K Nordén, and John P Wilson. The smallest diplodocid skull reveals cranial ontogeny and growth-related dietary changes in the largest dinosaurs. *Scientific reports*, 8(1):1–12, 2018.

9. Klara K Nordén, Christopher J Duffin, and Michael J Benton. A marine vertebrate fauna from the late triassic of somerset, and a review of british placodonts. *Proceedings of the Geologists' Association*, 126(4-5):564–581, 2015.

Invited talks & presentations

August 2022 **Congress of the European Society for Evolutionary Biology**, *Poster presentation: All that glitters is not gold*, Prague, Czech Republic

July 2021 **Princeton University Materials Academy programme**, *Invited talk: Rainbow colours in nature*, Princeton University, Princeton, USA
Engaging high school students from groups historically underrepresented in STEM in science topics, with focus on material science

June 2021 **5th Annual Digital Data in Biodiversity Research Conference**, *Oral presentation: Detecting iridescent feather nanostructures with polarization imaging*, Florida Museum of Natural History, FL, USA

May 2021 **Natural Sciences Collections Association Conference**, *Oral presentation: A non-destructive method to detect iridescent feather nanostructures*, UK

January 2020 **Society for Integrative and Comparative Biology Annual Meeting**, *Oral presentation: Do diverse feather nanostructures increase the colourfulness of iridescent plumage?* , Austin, TX, USA

March 2019 **7th Annual Symposium, organised by Metropolitan Society of Natural Historians**, *Invited talk: Diversity of iridescent structural colours in modern and fossil birds*, American Museum of Natural History, New York City
The symposium is an opportunity for scientist to share their research with the public.

August 2017 **Progressive Palaeontology Conference**, *Oral presentation: Were herbivorous dinosaurs in decline before the K-Pg extinction?*, Leicester, UK

References

- Prof. Mary C. Stoddard (mstoddard@princeton.edu)
  PhD advisor
- Prof. Michael J. Benton (mike.benton@bristol.ac.uk)
  MSci advisor
- Dr. Jakob Vinther (jakob.vinther@bristol.ac.uk)
  MSci advisor