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: biodiversity, evolution, ecology, paleontology, data collection, statistical analysis, communication, project management, international collaboration

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

Research

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

- Design, fund, and implement a 5-year research programme in evolutionary biology
- Explore the evolution of iridescent 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

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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.

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 & computer skills

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

Computer R, MATLAB, Photoshop, InkScape, Microsoft Office Suite, ArcGIS, Jekyll website design

Publications

1. 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.

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

3. 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.

4. 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.

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

6. 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.

7. 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.

8. 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