Dr. Alison T. Cribb, Ph.D.
1851 Research Fellow
University of Southampton, School of Ocean and Earth Sciences
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Education

2023: Ph.D. in Geological Sciences, University of Southern California
Los Angeles, California, USA
Dissertation title: "The geobiological role of bioturbating ecosystem engineers during key evolutionary intervals in Earth history "
Thesis advisors: Prof. Frank A. Corsetti, Prof. David J. Bottjer

2018: B.A. in Earth and Environmental Sciences, Highest Honors, Vanderbilt University
Nashville, Tennessee, USA
Honors thesis title: "Terminal Neoproterozoic bioturbation and implications for the extinction of the Ediacara biota"
Thesis advisor: Dr. Simon A. F. Darroch

Research and Work Experience

2023 – 2026: 1851 Science and Engineering Research Fellow, "Ecosystem engineers, resilience, and climate change through Earth history". University of Southampton, School of Ocean and Earth Science. Funded by the Royal Commission for the Exhibition of 1851.

Awards, Honors, and Fellowships

2023-2026: 1851 Science and Engineering Research Fellowship, Royal Commission of the 1851 Exhibition.
2023: University of Southern California PhD Achievement Award, one of six recipients across the university, awarded for academic excellence and success during doctoral studies
2022: Palaeontological Association Annual Meeting Council Poster Prize, awarded for best poster among early career researchers
2022: Winifred Goldring Award, Honorable Mention, awarded by the Association for Women Geoscientists and The Paleontological Society
2021: University of Southern California Gold Fellowship
2020: Palaeontological Association Annual Meeting President's Prize, awarded for best talk among early career researchers
2020-2021: University of Southern California Women in Science and Engineering (WiSE) Cisco Systems Graduate Fellowship
2019: Student Presentation Award, Honorable Mention, Geological Society of America Geobiology and Geomicrobiology Division
2018: B.A. awarded with Highest Honors, Vanderbilt University

Invited Presentations and Seminars

2022: University of Portsmouth, School of the Environment, Geography, and Geosciences seminar series. Portsmouth, England, UK.

2022: University of Leeds, Earth Surface Science Institute (ESSI) seminar series. Leeds, England, UK.

2022: Biosphere Evolution, Transitions and Resilience (BETR), Invited speaker. Milton Keynes, England, UK.

2022: 6th Annual Nereis Park conference, Keynote speaker. Session: Bioturbation-Ecosystem Relationships. The European Institute for Marine Sciences (IUEM), Lagonna-Daoulas, Brittany, France.

2022: Goldschmidt Annual Meeting, Keynote speaker. Session: Life and the Environment in the Phanerozoic. Hawaii, USA.

2020: NASA Jet Propulsion Laboratory Origins and Habitability Lab, Seminar speaker. California, USA.

Publications

In prep, submitted, and in review manuscripts

1. **Cribb, A. T.**, Darroch, S.A.F., Ezard, T.H.G. How to engineer a habitable planet. *In prep for invited special issue in Palaeontology*.
2. **Cribb, A. T.**, Stockey, R.G., Feng, X., Bottjer, D.J. Environmental drivers and biogeochemical consequences of benthic extinctions in the Early Triassic. *In prep for invited special issue in Nature Communications Earth & Environment.*
3. **Cribb, A. T.**, Godbold, A. L., Celestian, A., Koester, B. E., van de Velde, S. J., Corsetti, F. A., Bottjer, D. J. Characterizing Early Cambrian ecosystem engineering behaviors from the Deep Spring Formation of the White-Inyo region. *In prep for Geological Magazine*.

Published manuscripts

4. **Cribb, A. T.**, Formoso, K., Woolley, H. C., Beech, J., Brophy, S., Byrne, P. J., Cassady, V. C., Godbold, A. L., Larina, E., Maxeiner, P., Wu, Y.H., Corsetti, F. A., and Bottjer, D. J. Contrasting terrestrial and marine ecospace dynamics after the end-Triassic mass extinction event. *Accepted, Proceedings of the Royal Society B.*
5. **Cribb, A. T.**, van de Velde, S. J., Berelson, W. M., Bottjer. D. J., and Corsetti, F. A. 2023. Ediacaran-Cambrian bioturbation did not extensively oxygenate sediments in shallow marine ecosystems. *Geobiology*, 24, 435-453. (doi: 10.1111/gbi.12550)
6. Feng, X., Chen, Z., Benton, M. J., Su, C., Bottjer, D.J., **Cribb, A.T.**, Li, Z., Zhao, L., Zhu, G., Huang, Y., and Guo, Z. 2022. Resilience of infaunal ecosystems during the Early Triassic greenhouse. *Science Advances,* 8, eabo0596 (doi: 10.1126/sciadv.abo0597).
7. Darroch, S. A. F., **Cribb, A. T.,** Buatois, L. A., Germs, G. J. B., Kenchington, C. G., Smith, E. F., Mocke, H., O'Neil, G. F., Schiffbauer, J., Maloney, K., Racicot, R. A., Turk, K. A., Gibson, B. M., Koester, B. E., Boag, T. H., Tweedt, S., and Laflamme, M. 2020. The trace fossil record of the Nama Group, Namibia: Exploring the Ediacaran roots of the Cambrian Explosion. *Earth-Science Reviews*, 103435. (doi: 10.1016/j.earscirev.2020.103435)

8. Maloney, K. M., Boag, T. H., Facciol, A. J., Gibson, B. M., **Cribb, A.,** Koester, B. E., Kenchington, C. G., Racicot, R. A., Darroch, S. A. F., and Laflamme, M. Paleoenvironmental analysis of Ernietta-bearing Ediacaran deposits in southern Namibia. 2020. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 556, 109884. (doi:10.1016/j.palaeo.2020.109884)
9. **Cribb, A. T.** and Bottjer, D. J. 2020. Complex marine bioturbation ecosystem engineering behaviors persisted in the wake of the end-Permian mass extinction. *Scientific Reports*, 10, 203. (doi:10.1038/s41598-019-56740-0)
10. **Cribb, A. T.,** Kenchington, C. G., Koester, B. E., Gibson, B. G., Boag, T. H., Racicot, R. A., Mocke, H., Laflamme, M., and Darroch, S. A. F. 2019. Increase in metazoan ecosystem engineering prior to the Ediacaran-Cambrian boundary in the Nama Group, Namibia. *Royal Society Open Science*, 6, 190548. (doi:10.1098/rsos.190548)

Externally Funded Research

2023: 1851 Science and Engineering Research Fellowship
2019: Geological Society of American Graduate Student Research Grant
2019: Society for Sedimentary Geology (SEPM) Foundation Student Research Grant
2017: Harry B. Whittington Award, Paleontological Society Student Research Grant
2017: Eugene Vaughan Assistantship in Geology, Vanderbilt University

Conference Abstracts and Presentations (abridged: first-author, since 2018)

[†]Invited presentation
[§]Award given for presentation

1. **Cribb, A. T.**, Stockey, R.G., Feng, X., Bottjer, D.J. 2023. Environmental drivers and biogeochemical consequences of benthic extinctions in the Early Triassic. *Geological Society of America Annual Meeting*, Pittsburgh, PA, USA. Oral presentation.
2. **Cribb, A. T.**, Darroch, S.A.F., Ezard, T.H.G. 2023. How to engineer a habitable planet: New frameworks for understanding the rise and fall of marine ecosystem engineers through Earth history. *The Palaeontological Association Annual Meeting*, Cambridge, England. Oral presentation. Selected for the annual meeting symposium, "Ecosystem engineers through deep time"
3. **Cribb, A. T.**, Stockey, R.G., Feng, X., Bottjer, D.J. 2023. Biogeochemical consequences of benthic extinctions during the end-Permian mass extinction. *Life and Planet*, London, England. Poster presentation.
4. **Cribb, A.T.**, Formoso, K., Woolley, H.C., Beech, J., Brophy, S., Byrne, P.J., Cassady, V.C., Godbold, A.L., Larina, E., Maxeiner, P., Wu, Y.H., Corsetti, F.A., Bottjer, D.J. 2022. Decoupled terrestrial and marine ecological recovery after the end-Triassic mass extinction event. *Geological Society of America, GSA Connects*. Denver, CO. Oral presentation.
5. [†]**Cribb, A.T.**, van de Velde, S.J., Berelson, W.M., Corsetti, F.A., Bottjer, D.J. 2022. Investigating macrofauna-driven sediment oxygenation during the Ediacaran-Cambrian transition. *Biosphere, Evolutions, and Transitions (BETR) finale meeting*. Milton-Keynes, England. Oral presentation. (*Invited speaker)

6. †**Cribb, A.T.** Utilization of the trace fossil record to understand bioturbators' ecosystem engineering impact over the last 560 million years. *6th Nereis Park Conference and Thematic School*, Lagonna-Daoulas, France. Oral presentation. (*Invited as a keynote speaker for the session "Bioturbation-ecosystem relationships)
7. §**Cribb, A.T.,** Godbold, A.L., van de Velde, S.J., Koester, B.E., Celestian, A., Bottjer, D.J., Corsetti, F.A. 2022. Bioturbating ecosystem engineers and their sedimentary biogeochemical impact: A case study from the Lower Cambrian Deep Spring Formation. *The Palaeontological Association Annual Meeting*, Cork, Ireland. Poster presentation. (*Awarded Annual Meeting Council Poster Prize)
8. **Cribb, A.T.,** Formoso, K., Woolley, C.H., Beech, J.D., Brophy, S., Byrne, P.J., Cassady, V.C., Godbold, A.L., Larina, E., Maxeiner, P., Wu, Y., Corsetti, F.A., Bottjer, D.J. 2022. Terrestrial and marine ecospace dynamics across the end-Triassic mass extinction event. *The Palaeontological Association Annual Meeting*, Cork, Ireland. Poster presentation.
9. †**Cribb, A.T.,** van de Velde, S.J., Berelson, W.M., Bottjer, D.J.,Corsetti, F.A. 2022. Geobiological impacts of Earth's early complex bioturbators during the Ediacaran-Cambrian transition. *Goldschmidt Annual Meeting*, Hawaii, USA. Oral presentation presented online. (*Invited keynote speaker in session "Life and the Environment in the Phanerozoic")
10. **Cribb, A.T.,** van de Velde, S.J., Berelson, W. M., Corsetti, F. A., Bottjer, D. J. 2022. Revealing the biogeochemical role of Ediacaran-Cambrian bioturbators during the Agronomic Revolution. *Southern California Geobiology Symposium*, Riverside, CA, USA. Oral presentation.
11. §**Cribb, A.T.**, van de Velde, S.J., Berelson, W.M., Corsetti, F.A., Bottjer, D.J. 2021. Did early bioturbators oxygenate shallow to deep sediment tiers in Ediacaran-Cambrian benthic ecosystems? *Geological Society of America Annual Meeting*, Portland, OR, USA. Oral presentation. (*Selected for The Paleontological Society's session Future Leaders in Paleontology)
12. **Cribb, A.T.,** Bottjer, D.J. 2021. Biogeochemical consequences of a sedimentary mixed layer collapse in the wake of the end-Permian mass extinction. *Geological Society of America Annual Meeting*, Portland, OR, USA. Poster presentation.
13. **Cribb, A.T.,** van de Velde, S.J., Berelson, W.M., Bottjer, D.J., Corsetti, F.A. 2021. Controls on the oxygen penetration depth in Ediacaran-Paleozoic benthic ecosystems: A reactive-transport modeling study. *Goldschmidt Annual Meeting*, online meeting. Oral presentation.
14. §**Cribb, A.T.,** van de Velde, S.J., Darroch, S.A.F., Bottjer, D.J., Corsetti, F.A. 2020. Growing pains of the Agronomic Revolution: Early bioturbators stimulated sulfide production in shallow sediment tiers. *The Palaeontological Association Annual Meeting*, online meeting. Oral presentation. (*Awarded the President's Prize)
15. **Cribb, A.T.,** van de Velde, S.J., Darroch, S.A.F., Bottjer, D.J., Corsetti, F.A. 2020. Engineering benthic biogeochemistry: Reactive-transport modeling of biomixing and bioirrigation behaviors across the Ediacaran-Cambrian boundary. *Geological Society of America Meeting*, GSA Connects Online. Oral presentation.

16. **Cribb, A.T.**, Bottjer, D.J. 2020. Complex benthic ecosystem engineering in the Early Triassic: The trace fossil record as a tool for understanding ecosystem function after mass extinction events. *Ocean Sciences Meeting*, San Diego, CA, USA. Poster presentation.
17. **Cribb, A.T.,** Corsetti, F.A., Bottjer, D.J. 2019. Bioturbation behaviors across the Ediacaran-Cambrian boundary in the White-Inyo Mountains, CA, USA: Implications for biomixing and bioirrigation. A*merican Geophysical Union Annual Meeting,* San Francisco, CA, USA. Poster presentation.
18. **Cribb, A.T.**, Bottjer, D.J. 2019. Complex marine ecosystem engineering following the End-Permian mass extinction. *Geological Society of America Annual Meeting*, Phoenix, AZ, USA. Poster presentation.
19. **Cribb, A.T.,** Bottjer, D.J., Corsetti, F.A. 2019. Trace fossils from the Ediacaran-Cambrian boundary in the White-Inyo Mountains, California, USA. *Geological Society of America Annual Meeting,* Phoenix, AZ, USA. Poster presentation.
20. **Cribb, A.T.**, Bottjer, D.J. 2019. Early marine ecosystem engineering recovery after the End-Permian mass extinction. *North American Paleontological Convention*, Riverside, CA, USA. Poster presentation.
21. **Cribb, A.T.,** Kenchington, C.G., Laflamme, M., Darroch, S.A.F. 2019. Cambrian-type metazoan ecosystem engineering in the terminal Ediacaran Nama Group, Namibia. *North American Paleontological Convention*, Riverside, CA, USA. Oral presentation.
22. **Cribb, A.T.,** Kenchington, C.G., Laflamme, M., Darroch, S.A.F. 2019. Increase in metazoan ecosystem engineering prior to the Ediacaran-Cambrian boundary in the Nama Group, Namibia. *Southern California Geobiology Conference*, California Institute of Technology, Pasadena, CA, USA. Poster presentation.
23. [§]**Cribb, A.T.,** Kenchington, C.G., Laflamme, M., Darroch, S.A.F. 2018. Ecosystem engineering in the Nama Group, Namibia as a test for a biologically driven extinction of the Ediacara biota. *Geological Society of America Annual Meeting*, Indianapolis, IN, USA. Poster presentation. (*Received honorable mention in GSA Geobiology/Geomicrobiology Division Student Presentation Awards)
24. **Cribb, A.T.,** Kenchington, C.G., Darroch, S.A.F. 2018. Terminal Neoproterozoic bioturbation and implications for the extinction of the Ediacara Biota. *Southeastern Geological Society of America Meeting*, Knoxville, TN, USA. Oral presentation.

Teaching Experience

University of Southampton

- Co-instructor: *SOES 1008: Earth and Ocean System,* topics in "Development of life on Earth" (4 lectures) and "Co-development of life and the Earth systems" (4 lectures) (Semester 1, 2023)

University of Southern California

- Teaching assistant: *GEOL 126: The History of Life on Earth: A View Through the Museum* (Spring 2019, Spring 2020, Spring 2021)
- Teaching assistant: *GEOL 150: Climate Change* (Fall 2019)
- Teaching assistant: *GEOL 108: Crises of a Planet* (Fall 2018)
- Completion of course *GEOL 593*: *Practicum in Teaching the Liberal Arts*

Vanderbilt University

- Teaching assistant: *EES 2510: Earth Systems Through Time* (Fall 2016, Fall 2017)

Outreach Activities and Professional Service

Reviewer: *Geobiology* (Wiley), *Geological Magazine* (Cambridge University Press), *Paleobiology* (Cambridge University Press), *Proceedings of the National Academy of Sciences (*National Academy of Sciences), *Scientific Reports* (Springer)

2023-present: **Secretary, Earth Systems Science Group of the Geological Society of London**

2023: **Judge for student presentation awards, GSA Geobiology and Geomicrobiology Division,** 2023 Geological Society of America Annual Meeting, Pittsburgh, PA, USA.

2023: **Judge for student poster presentation awards, The Paleontological Society,** 2023 Geological Society of America Annual Meeting, Pittsburgh, PA, USA.

2023: **Organizing committee member, 2023 Life and Planet Conference:** One of twelve organizing committee members planning and managing the first annual Life and Planet Conference in London, England; hosted through the Earth Systems Science division of the Geological Society of London.

2021-present: **Research Coordination Network participant:** Initial core participant in NSF funded Research Coordination Network "Ecological and Evolutionary Effects of Extinction and Ecosystem Engineers (E^6)"

2022: **Session co-chair:** "Ecosystem Engineering Through Earth History," Geological Society of America Annual Meeting (Denver, CO)

2022: **Session co-chair:** "New Voices in Geobiology," Geological Society of America Annual Meeting (Denver, CO)

2022: **Session co-chair:** "New Advances in Geobiology," Geological Society of America Annual Meeting (Denver, CO)

2021-2022: **Seminar series organizer: "Paleoenvironmental Seminar," University of Southern California, Department of Earth Sciences**: organization and management of year-long hybrid seminar series covering topics including geobiology, paleoecology, low-temperature geochemistry, surface processes, and paleoclimatology, primarily featuring early career researchers.

2020-2022: **Graduate Student Representative, GSA Geobiology and Geomicrobiology:** planning and chairing the "New Voices in Geobiology" GSA sessions, organization of the annual student presentation awards, and helping run the GBGM division social media accounts

2021: **Session co-chair:** "New Voices in Geobiology," Geological Society of America Annual Meeting (Portland, OR)

2021: **Session co-chair:**- "New Advances in Geobiology," Geological Society of America Annual Meeting (Portland, OR)

2020-2021: **Deputy Co-chair, 2021 Southern California Geobiology Conference planning committee:** securing funding for the conference, chairing the historical geobiology session, helping manage the conference's online platforms (Zoom, Discord, and Gather), organization of the scientific program, and implementation of a conference code of conduct.

2020: **Session co-chair:** "Ecosystem Engineering Through Earth History", Geological Society of America Annual Meeting, GSA Connects Online

2020: **Session co-chair:** "New Voices in Geobiology," Geological Society of America Annual Meeting, GSA Connects Online

2020: **Session co-chair:** "New Advances in Geobiology," Geological Society of America Annual Meeting, GSA Connects Online

2019: **Session co-chair:** "Phanerozoic Earth-Life Transitions," Geobiology Society Conference (Banff, Alberta, Canada)

2016-2018: **Dean's Undergraduate Advisory Board Member:** Vanderbilt University College of Arts and Science

Miscellaneous presentations, seminars, and media

2022: **University of Southern California Paleo/Environmental Seminar,** "Decoupled terrestrial and marine ecological response during the Triassic-Jurassic mass extinction event."

2020: **University of Southern California Women in Science and Engineering (WiSE) Stem Bytes Seminar speaker**, "How Early Worms Helped Engineer Earth's Early Benthic Ecosystems," presentation given to a general audience of University of Southern California undergraduate students interested in STEM majors and research.

2020: **University of Southern California Paleo/Environmental Seminar,** "Complex marine bioturbation ecosystem engineering behaviors persisted in the wake of the end-Permian mass extinction"

2019: **University of Southern California Paleo/Environmental Seminar,** "Early metazoan ecosystem engineering in the Nama Group, Namibia and implications for the extinction of the Ediacara Biota."

2018: **National Public Radio (NPR)'s On Point,** episode about senior thesis projects as seven senior undergraduates from across the country selected to speak live on-air on *On Point* about our honors thesis projects.