

Dr. Alison T. Cribb
1851 Research Fellow
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EDUCATION

- Ph.D. Geological Sciences, University of Southern California** 2018 - 2023
Los Angeles, California, USA
Doctoral dissertation title: “The geobiological role of bioturbating ecosystem engineers during key evolutionary intervals in Earth history”
Advisors: Prof. Frank A. Corsetti, Prof. David J. Bottjer
- B.A. Earth and Environmental Sciences, Vanderbilt University** 2014 - 2018
Conferred with Highest Honors
Nashville, Tennessee, USA
Honours thesis title: “Terminal Neoproterozoic bioturbation and implications for the extinction of the Ediacara biota”
Advisor: Dr. Simon A. F. Darroch

PROFESSIONAL APPOINTMENTS

- 1851 Science and Engineering Research Fellow** 2023-2026
School of Ocean and Earth Science, University of Southampton
Funded by the Royal Commission for the Exhibition of 1851

AWARDS, HONORS, AND FELLOWSHIPS

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| Science and Engineering Research Fellowship | Royal Commission for the Exhibition of 1851 | 2023-2026 |
| Ph.D. Achievement Award
<i>for academic excellence and success during doctoral studies, one of six awards across graduating PhDs</i> | University of Southern California | 2023 |
| Graduate student research award
<i>for graduate student members of the Ecological and Evolutionary Effects of Ecosystem Engineers and Extinctions RCN</i> | E6 Research Coordination Network (NSF funded) | 2023 |
| Council Poster Prize
<i>for best poster among early career researchers</i> | Palaeontological Association | 2022 |
| Winifred Goldring Award, Honourable Mention | Association for Women Geoscientists, The Paleontological Society | 2022 |
| Gold Fellowship
<i>for research excellence among PhD students</i> | University of Southern California | 2021 |
| President’s Prize
<i>for best talk among early career researchers</i> | Palaeontological Association | 2020 |

Cisco Systems Graduate Fellowship <i>awarded to a cohort of women pursuing doctorate degrees in science and engineering</i>	Women in Science and Engineering (WiSE) - University of Southern California	2020
Student Presentation Award, Honourable Mention	Geological Society of America, Geobiology and Geomicrobiology Division	2019
Degree conferred with Highest Honors	Vanderbilt University	2018

RESEARCH GRANTS

Science and Engineering Research Fellowship	Royal Commission for the Exhibition of 1851	2023
Gold Fellowship	University of Southern California	2021
Graduate Student Research Grant	Geological Society of American	2019
Student Research Grant	Society for Sedimentary Geology (SEPM) Foundation	2019
Harry B. Whittington Award, Student Research Grant	Paleontological Society	2017
Eugene Vaughan Assistantship in Geology	Vanderbilt University	2017

PUBLICATIONS

12. **Cribb, A. T.**, Darroch, S.A.F. 2024. How to engineer a habitable planet: the rise of marine ecosystem engineers through the Phanerozoic. *Palaeontology*, 67, e12726. (doi: 10.1111/pala.12726) (invited contribution)
11. **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. *Proceedings of the Royal Society B*, 290, 20232232. (doi: 10.1098/rspb.2023.2232)
10. **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)
9. 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 Earth. *Science Advances*, 8, eabo0596 (doi: 10.1126/sciadv.abo0597).

8. 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)
7. Maloney, K. M., Boag, T. H., Facciol, A. J., Gibson, B. M., **Cribb, A. T.**, 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)
6. **Cribb, A. T.**, 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)
5. **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)

Published perspective, news, and opinion pieces

4. **Cribb, A. T.** & Darroch, S.A.F. 2024. Machine learning maps Earth’s hidden bioturbation. *Current Biology*, 34, 630-632. (doi: 10.1016/j.cub.2024.05.038)

In prep, submitted, and in review manuscripts

3. **Cribb, A. T.**, Darroch, S.A.F., Ezard, Gearty, W. Phanerozoic marine biodiversity increased in presence of ecosystem engineers. *In prep for Nature Ecology & Evolution*. (Target submission: October 2024.)
2. Darroch, S.A.F., **Cribb, A. T.**, Casey, M.M., Bates, A.E., Clapham, M.E., Contreras, D.L., Craffey, M., Duijnste, I.A.P., Gearty, W., Gotelli, N.J., Hamilton, M.J., Hayes, R.F., Hull, P.M., Ibarra, D.E., Lee, J., Looy, C.V., Lyson, T.R., Muddiman, B., Roopnarine, P.D., Shupinski, A.B., Smith, F.A., Stigall, A.L., Tome, C.P., Turk, K.A., Viallaseñor, A., Wagner, P.J., Wang, S., Lyons, S.K. Ecosystem engineering, ‘Eart systems engineers’, and the lasting impact of organisms in deep time. *Solicitation accepted, in prep for Trends in Ecology & Evolution*.
1. Feng, X., Chen, Z., Benton, M.J., Bottjer, D. J., **Cribb, A. T.**, Su, C., Luo, M., Zhao, L., Zou, C., Xu, L., Jiang, Y., Yan, P., Liu, J., Qiu, Z., Huang, Y., Guo, Z., Zheng, Z., Jing, Y., Li, Z. Predator-prey interactions in the Early Triassic ocean. *In review, Geobiology*.

INVITED PRESENTATIONS AND SEMINARS

University of Bristol, School of Earth Sciences/School of Biological Sciences <i>Palaeontology seminar, Palaeobiology Research Group</i> Bristol, England, UK	2025
Geological Society of America Annual Meeting – Keynote speaker <i>Session: Phylogenetic and Computational Approaches in Paleobiology</i> Anaheim, California, USA	2024
University of Oxford, All Souls College and Department of Earth Sciences <i>“The Past and Future of Life on our Dynamic Planet” seminar series</i> All Souls College, University of Oxford, England, UK	2024
University of Portsmouth, School of the Environment, Geography, and Geosciences <i>Portsmouth SEGGS seminar series</i> Portsmouth, England, UK	2022
University of Leeds, School of Earth and Environment <i>Earth Surface Science Institute (ESSI) seminar series</i> Leeds, England, UK	2022
Biosphere Evolution, Transitions and Resilience (BETR) – Invited speaker Milton Keynes, England, UK	2022
6th Annual Nereis Park Conference – Keynote speaker <i>Session: Bioturbation-Ecosystem Relationships</i> The European Institute for Marine Sciences (IUEM), Lagonna-Daoulas, Brittany, France	2022
Goldschmidt Annual Meeting – Keynote speaker <i>Session: Life and the Environment in the Phanerozoic</i> Honolulu, Hawaii, USA	2022
NASA Jet Propulsion Laboratory <i>Origins and Habitability Lab seminar</i> Pasadena, California, USA	2020

TEACHING

Student mentorship

Bel Holmes <i>Coral extinction and recovery patterns at the Triassic-Jurassic boundary</i>	Third year Marine Biology dissertation, University of Southampton	2024-2025
Neha Ghosh <i>Terrestrial ecological responses to ancient and modern extinctions</i>	Third year Natural Sciences dissertation, University of Southampton	2024-2025
Neha Ghosh <i>A Tale of Two Warming Events: Comparing ecological responses of modern and ancient climatic extremes</i>	SMMI Undergraduate Summer Intern, University of Southampton	2024

Instructor

Earth and Ocean System <i>“Development of Life on Earth” and “Co-development of life and the Earth systems” weeks</i> 8 lectures and 3 practicals	University of Southampton	2023, 2024
Palaeobiology <i>“Trace fossils” and “Palaeoecology” weeks</i> 2 lectures and 1 practical	University of Southampton	2024
Marine Invertebrates <i>“Origins of marine ecosystems”</i> 1 lecture	University of Southampton	2024
Co-evolution of Life and Earth <i>“Biodiversity curves and mass extinctions”</i> 2 practicals	University of Southampton	2024

Teaching assistant

The History of Life on Earth: A View through the Museum <i>Lead practical design for:</i> - “Scientific observations and interpretations” - “Introduction to rocks and minerals” - “Living fossils” - “Exploring the Grand Canyon: Environmental Reconstructions” (Virtual field trip) - “Ecosystem Reconstructions in The Burgess Shale” - “Earth’s Past and Future Climate”	University of Southern California	2019, 2020, 2021
Climate Change	University of Southern California	2019
Crises of a Planet	University of Southern California	2018
Earth Systems Through Time	Vanderbilt University	2016, 2017

Pedagogical training

Practicum in Teaching the Liberal Arts <i>Focus on teaching in the geological and biological sciences</i>	University of Southern California	2018
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PROFESSIONAL SERVICE

Committees and appointments

Secretary of the Earth Systems Science Group	Geological Society of London	2023-present
Ecological and Evolutionary Effects of Extinction and Ecosystem Engineers (E6) RCN <i>PIs: Kate Lyons, Cindy Looy, Simon Darroch, Pete Wagner</i>	National Science Foundation-funded Research Coordination Network	2021-present

Graduate Student Representative	Geological Society of America – Geobiology and Geomicrobiology division	2020-2022
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Dean’s Student Advisory Board	Vanderbilt University	2016-2018
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Academic meetings and seminars

Life and Planet 2025 <i>Organizing committee member</i>	Geological Society of London	2025
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Life and Planet 2024 <i>Organizing committee member</i>	Geological Society of London	2024
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Symposium of Vertebrate Palaeontology and Comparative Anatomy <i>Organizing committee member</i>	University of Southampton	2024
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Life and Planet 2023 <i>Organizing committee member</i>	Geological Society of London	2023
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Paleo/Environment Seminar <i>Co-organiser of weekly seminars for the academic year</i>	University of Southern California	2021-2022
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Southern California Geobiology Symposium <i>Deputy co-chair of organizing committee</i>	University of Southern California (ran virtually)	2020-2021
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Conference sessions

Ecosystem Engineering Through Earth History <i>Co-chaired with other graduate student members of the E6 RCN</i>	Geological Society of America Denver, Colorado	2022
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New Voices in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Denver, Colorado	2022
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New Advances in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Denver, Colorado	2022
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New Voices in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Portland, Oregon	2021
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New Advances in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Portland, Oregon	2021
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New Voices in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Virtual Meeting	2020
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New Advances in Geobiology <i>Annual GSA GBGM Division Session</i>	Geological Society of America Virtual Meeting	2020
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Phanerozoic Earth-Life Transitions Geobiology Society Conference 2019
Invited student session chair Banff, Canada

Other service roles

Student presentation judge Geological Society of 2023, 2024
GSA Geobiology and Geomicrobiology Division
student presentation awards at the GSA Annual
meeting America – Geomicrobiology
and Geobiology Division

Student presentation judge The Paleontological Society 2023, 2024
Paleontological Society student presentation awards
at the GSA Annual Meeting

Reviewer

Current Biology; Geobiology; Geological Magazine; Journal of Open Source Science; Paleobiology; Palaeogeography, Palaeoclimatology, and Palaeoecology; Palaeontology; Proceedings of the National Academy of Sciences; Proceedings of the Royal Society B; Scientific Reports

PUBLIC OUTREACH AND ENGAGEMENT

Sidmouth Science Festival 2024
Volunteer with University of Southampton, School of Ocean and Earth Science
Developed and presented exhibit “Reefs Through Time”

Southampton International Boat Show 2024
Volunteer
Exhibition of “Reefs Through Time” in University of Southampton tent

Lyme Regis Fossil Festival 2024
Organizing team and volunteer with University of Southampton, School of Ocean and Earth
Science
Developed and presented exhibit “Reefs Through Time”

Southampton Science and Engineering Festival (SOTSEF) 2024
School of Ocean and Earth Science organizing team
Assisted in development of exhibit on coral reefs, mammoths, and ichthyosaurs

Stem Bytes Seminar Speaker, Women in Science and Engineering (WiSE) 2020
chapter of the University of Southern California
“How Early Worms Helped Engineer Earth’s Early Benthic Ecosystems”
Public talk aimed to increase recruitment of women into STEM majors at the University of
Southern California.

On Point, National Public Radio (NPR) guest 2018
“It’s Senior Thesis Season” episode
Invited to discuss undergraduate honors thesis to a national audience on live radio

CONFERENCE ABSTRACTS

Abridged: First-author abstracts presented since 2020

[†]Invited presentation

[§]Award given for presentation

- [†]19. Cribb, A.T. 2024. Role of ecosystem engineers in Phanerozoic biodiversity and ecology. *Geological Society of America Annual Meeting*, Anaheim, CA. Oral presentation. Invited keynote for “Phylogenetic and Computational Approaches in Paleobiology.”
18. Cribb, A.T., Darroch, S.A.F., Gearty, W., Ezard, T.H.G. 2024. Phanerozoic marine biodiversity increased in presence of ecosystem engineers. *Life and Planet*, London, England. Poster presentation.
17. Cribb, A.T., Darroch, S.A.F., Ezard, T.H.G. 2024. Ecosystem engineers impact marine biodiversity through the Phanerozoic. *European Geosciences Union*, Vienna, Austria. Oral presentation (virtual).
16. 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.
15. 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”
14. 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.
13. 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 Annual Meeting*. Denver, CO. Hybrid oral presentation.
- [†]12. 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. Invited oral presentation.
- [†]11. 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. Invited plenary speaker for session “Bioturbation-ecosystem relationships.”
- [§]10. 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.

9. 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.
- †8. 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. Invited keynote speaker in session "Life and the Environment in the Phanerozoic."
7. 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.
- §6. 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.
5. 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.
4. 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. Online oral presentation.
- §3. 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. Online oral presentation. Awarded the President's Prize.
2. 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. Online oral presentation.
1. Cribb, A.T. & Bottjer, D.J. 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. Poster presentation.