

**Alison T. Cribb**  
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Department of Earth Sciences  
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### **Education**

#### **Ph.D. Candidate, University of Southern California**

Department of Earth Sciences

Los Angeles, California, U.S.A.

August 2018 – present (anticipated graduation: Summer 2023)

Thesis topic: Investigating the co-evolution of bioturbating ecosystem engineers and benthic biogeochemical cycles during the Ediacaran-Cambrian transition

Thesis advisors: Dr. Frank A. Corsetti, Dr. David J. Bottjer

#### **B.A., conferred with highest honors, Vanderbilt University**

Department of Earth and Environmental Sciences

Nashville, Tennessee, U.S.A.

August 2014 – May 2018

Honors thesis title: “Terminal Neoproterozoic bioturbation and implications for the extinction of the Ediacara biota”

Thesis advisor: Dr. Simon A. F. Darroch

### **Awards, Honors, and Fellowships**

- 2022: Palaeontological Association Annual Meeting Council Poster Prize, awarded for best poster among early career researchers
- 2022: Honorable mention for the Winifred Goldring Award, 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: Degree awarded with Highest Honors by department, Vanderbilt University

### **Invited Talks and Presentations**

- 2022: **Goldschmidt Annual Meeting, Keynote speaker.** “*Biogeochemical impacts of Earth’s early complex bioturbators during the Ediacaran-Cambrian transition.*” Session: Life and the Environment in the Phanerozoic. Hawaii, USA.
- 2022: **6<sup>th</sup> Annual Nereis Park conference, Keynote speaker.** Session: Bioturbation-Ecosystem Relationships. The European Institute for Marine Sciences (IUEM), France.

**2020: NASA Jet Propulsion Laboratory Origins and Habitability Lab.** “*Early animal ecosystem engineering, sediment biogeochemistry, and benthic ecosystem habitability during the Neoproterozoic-Phanerozoic transition.*” January 7, 2020. California, USA.

### **Funded Research Grants**

**2019:** Geological Society of American Graduate Student Research Grant  
**2019:** Society for Sedimentary Geology (SEPM) Foundation Student Research Grant  
**2019:** Geological Society of American Cordilleran Section Student Travel Grant  
**2017:** Harry B. Whittington Award, Paleontological Society Student Research Grant  
**2017:** Eugene Vaughan Assistantship in Geology, Vanderbilt University

### **Publications**

1. 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).
2. 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)
3. Maloney, K. M., Boag, T. H., Faccioli, 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 Ernieetta-bearing Ediacaran deposits in southern Namibia. 2020. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 556, 109884. (doi:10.1016/j.palaeo.2020.109884)
4. **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)
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)

### **In revision, in review, and submitted publications**

1. **Cribb, A. T.**, van de Velde, S. J., Berelson, W. M., Bottjer, D. J., and Corsetti, F. A. Ediacaran-Cambrian bioturbators did not oxygenate sediments in shallow marine ecosystems. *In revision at Geobiology*.

### **Manuscripts in preparation**

1. **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. Terrestrial and marine ecospace dynamics across the Triassic-Jurassic mass extinction. \*ATC and KF are joint first authors. *In prep, target submission date: October 2022. Target journal: Paleobiology*

### **Accepted Conference Abstracts and Presentations**

1. **Cribb, A. T.** Utilization of the trace fossil record to understand bioturbators' ecosystem engineering impact over the last 560 million years. *6<sup>th</sup> Nereis Park Conference and Thematic School*, Lagonna-Daoulas, France. Oral presentation. (\*Invited as a keynote speaker for the session "Bioturbation-ecosystem relationships")
2. **Cribb, A. T.**, Godbold, A. L., van de Velde, S. J., Koester, B. E., Celestian, A., Bottjer, D.J., and 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)
3. **Cribb, A. T.**, Formoso, K., Woolley, C. H., Beech, J. D., Brophy, S., Byrne, P. J., Cassady, V. C., Godbold, A., Larina, E., Maxeiner, P., Wu, Y., Corsetti, F. A., and 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.
4. **Cribb, A. T.**, van de Velde, S. J., Berelson, W. M., David J. Bottjer, and Frank A. Corsetti. 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")
5. **Cribb, A. T.**, van de Velde, S. J., Berelson, W. M., Corsetti, F. A. and 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. and 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)
7. **Cribb, A. T.** and 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.
8. Formoso, K., **Cribb, A.**, Woolley, C. H., Beech, J. D., Brophy, S., Byrne, P. J., Cassady, V. C., Godbold, A., Larina, E., Maxeiner, P., Wu, Y., Corsetti, F. A., and Bottjer, D. J., 2021. Contemporaneous changes in terrestrial and marine functional ecology during ancient and modern mass extinction events: An ecospace cube approach. *Geological Society of America Annual Meeting*, Portland, OR, USA. Poster presentation.

9. **Cribb, A. T.**, van de Velde, S. J., Berelson, W. M., Bottjer, D. J., and 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.
10. **Cribb, A. T.**, van de Velde, S. J., Darroch, S. A. F., Bottjer, D. J., and 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)
11. **Cribb, A. T.**, van de Velde, S. J., Darroch, S. A. F., Bottjer, D. J., and 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.
12. **Cribb, A. T.** and 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.
13. **Cribb, A. T.**, Corsetti, F. A., and Bottjer, D. J. 2019. Bioturbation behaviors across the Ediacaran-Cambrian boundary in the White-Inyo Mountains, CA, USA: Implications for biomixing and bioirrigation. *American Geophysical Union Annual Meeting*, San Francisco, CA, USA. Poster presentation.
14. **Cribb, A. T.** and 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.
15. **Cribb, A. T.**, Bottjer, D. J., and 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.
16. Turk, K. A., **Cribb, A. T.**, and Darroch, S. A. F. 2019. CT-Scanning reveals possible bed-penetrative burrows from the terminal Ediacaran of Southern Namibia. *Geological Society of America Annual Meeting*, Phoenix, AZ. Poster presentation.
17. **Cribb, A. T.** and Bottjer, D. J. 2019. Early marine ecosystem engineering recovery after the End-Permian mass extinction. *North American Paleontological Convention*, Riverside, CA, USA. Poster presentation.
18. **Cribb, A. T.**, Kenchington, C. G., Laflamme, M., and 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.
19. Turk, K. A., **Cribb, A. T.**, and Darroch, S. A. F. 2019. Earliest complex trace fossils from the terminal Neoproterozoic of Namibia. *North American Paleontological Convention*, Riverside, CA, USA. Poster presentation.
20. Kenchington, C. G., **Cribb, A. T.**, Gibson, B. M., Darroch, S. A. F., Buatois, L., Germs, G. J. B., and Almond, J. 2019. Diverse and dense trace fossil assemblages from the Ediacaran of Namibia. *North American Paleontological Convention*, Riverside, CA, USA. Poster presentation.

21. **Cribb, A. T.**, Kenchington, C. G., Laflamme, M., and 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.
22. **Cribb, A. T.**, Kenchington, C. G., Laflamme, M., and 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)
23. **Cribb, A. T.**, Kenchington, C. G., and 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.
24. Rodewald, B. M., Darroch, S. A. F., and **Cribb, A. T.**, 2018. Quantifying trace fossils on Ediacaran-Cambrian samples from Death Valley. *Southeastern Geological Society of America Meeting*, Knoxville, TN, USA. Poster presentation.
25. Kenchington, C. G., **Cribb, A. T.**, Gibson, B. M., Darroch, S. A. F., Buatois, L., Germs, G. B., and Almond, J., 2018. Diverse and dense trace fossil assemblages from the Ediacara of Namibia. *European Geophysical Union General Assembly*, Vienna, Austria. Geophysical Research Abstracts. Poster presentation.
26. Maloney, K.M., Facciol, A.J., Gibson, B.M., **Cribb, A.**, Koester, B.E., Kenchington, C.G., Boag, T.H., Racicot, R.A., Darroch, S.A.F., and Laflamme, M., 2017. Understanding the distribution of Ediacaran deposits in southern Namibia. *International Symposium on the Ediacaran-Cambrian Transition*, St. John's, NL, Canada. Poster Presentation.
27. Maloney, K.M., Facciol, A.J., Gibson, B.M., **Cribb, A.**, Koester, B.E., Racicot, R.A., Darroch, S.A.F., and Laflamme, M., 2017. Facies analysis of Ediacaran deposits in southern Namibia. *Geological Association of Canada/Mineralogical Association of Canada Annual Meeting*, Kingston, ON, Canada.
28. Maloney, K.M., Facciol, A.J., Gibson, B.M., **Cribb, A.**, Koester, B.E., Racicot, R.A., Darroch, S.A.F., and Laflamme, M., 2017. Investigating the controls on the distribution of Ediacaran deposits and the impact on their morphology in southern Namibia. *Advances in Earth Science Research Conference*, London, ON, Canada.
29. Kenchington, C. G., **Cribb, A. T.**, Gibson, B. M., Darroch, S. A. F., Buatois, L., Germs, G. J. B., Almond, J., and McIlroy, D. 2017. Diverse and dense trace fossil assemblages from the Ediacaran of Namibia. *The Palaeontological Association Annual Meeting*. London, UK. Poster Presentation.
30. **Cribb, A.**, Darroch, S. A. F., and Laflamme, M. 2017. Quantifying ichnogenera diversity and bioturbation intensity in the terminal Neoproterozoic Nama Group, Namibia. *Geological Society of America Annual Meeting*, Seattle, WA, USA. Poster presentation.

31. **Cribb, A., Darroch, S. A. F., and Laflamme, M.** 2017. Interpreting complexity of trace fossils from the latest Neoproterozoic Nama Group, Namibia. *Northeastern/North-central Geological Society of America Meeting*, Pittsburgh, PA, USA. Poster presentation.

### **Outreach Activities and Professional Service**

**Reviewer:** *Scientific Reports* (Springer), *Geological Magazine* (Cambridge University Press)

**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<sup>6</sup>)”

**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 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**

1. 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.
2. 2020: **University of Southern California Paleo/Environmental Seminar**, “Complex marine bioturbation ecosystem engineering behaviors persisted in the wake of the end-Permian mass extinction”
3. 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.”
4. 2018: **Appearance on NPR’s On Point Podcast**, 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.

**Teaching Experience**

**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)

**Vanderbilt University**

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