

CONTACT INFORMATION

Assistant Professor
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EDUCATION

- 2020 Ph.D., Ecosystem Science and Management, Department of Ecology and Conservation Biology, Texas A&M University
- 2016 M.S.T., Teaching with Secondary Life and Earth Sciences concentration, Maine Center for Research in STEM Education, University of Maine
- 2013 M.S., Geosciences with Paleontology concentration, Department of Geosciences, East Tennessee State University
- 2011 Non-Degree Seeking, Department of Geology and Geological Engineering, South Dakota School of Mines and Technology
- 2009 B.A., Biology with Psychology minor, Department of Biology, Illinois Wesleyan University

APPOINTMENTS

- 2023 – Present Graduate Faculty, Texas A&M University
- 2023 – Present Research Associate, National Museum of Kenya
- 2022 – Present Coordinator, Wizipan Leadership and Sustainability Program, South Dakota State University
- 2022 – Present Assistant Professor, Department of Natural Resource Management, South Dakota State University

PREVIOUS EXPERIENCE

- 2021 – 2022 Visiting Scholar, Department of Biology and Microbiology, South Dakota State University
- 2020 – 2022 NSF Postdoctoral Research Fellow in Biology, Department of Ecology and Conservation Biology, Texas A&M University, and School of Biological Sciences and School of Earth and Atmospheric Sciences, Georgia Institute of Technology
- 2011 – 2022 Research Associate, Don Sundquist Center of Excellence in Paleontology, East Tennessee Museum of Natural History
- 2019 – 2020 Tom Slick Graduate Research Fellow, College of Agriculture and Life Sciences, Texas A&M University
- 2017 – 2018 Dishman-Lucas Graduate Research Assistant, Department of Ecosystem Science and Management, Texas A&M University
- 2016 – 2017 Merit Fellow, College of Agriculture and Life Sciences, Texas A&M University
- 2013 – 2014 AmeriCorps Member, Education & Marketing, East Tennessee Museum of Natural History

2009 – 2010 David B. Jones Intern, Ashfall Fossil Beds State Historical Park, University of Nebraska

PUBLICATIONS ^Uundergraduate student, ^Ggraduate student, and ^Ppostdoc authors

16. Schap^G, JA, JL McGuire, AM Lawing, F Manthi, and **RA Short**. In review. I estimate the rains down in Africa: Building ecometric models using small mammal hypsodonty to estimate paleoprecipitation across eastern Africa.
15. Lauer^G, DA, AM Lawing, **RA Short**, FK Manthi, J Müller, JJ Head, and JL McGuire. 2023. Disruption of trait-environment relationships in African megafauna occurred in the middle Pleistocene. *Nature Communications*, 14:4016. doi.org/10.1038/s41467-023-39480-8
14. **Short, RA**, JL McGuire, PD Polly, and AM Lawing. 2023. Trophically integrated ecometric models as tools for demonstrating spatial and temporal functional changes in mammal communities. *Proceedings of the National Academy of Science*, 120(7):e2201947120. doi.org/10.1073/pnas.2201947120. Invited contribution to *The Past as a Lens for Biodiversity Conservation on a Dynamically Changing Planet* Special Feature.
13. Martin, JM, **RA Short**, GE Plumb, L Markewicz, DH Van Vuren, B Wehus-Tow^G, E Otarola-Castillo, and ME Hill Jr. 2023. Integrated evidence-based extent of occurrence for North American bison since 1500 CE and before (Data Paper). *Ecology*, 104(1):e3864. doi.org/10.1002/ecy.3864
12. Zarestky, J, L Vilen^G, **RA Short**, R Struminger, and AM Lawing. 2021. Adult education at biological field stations: Building capacity for science learning. *Adult Education Quarterly*, 72(3):284-307. doi.org/10.1177/07417136211044728
11. **Short, RA**, and AM Lawing. 2021. Geography of artiodactyl locomotor morphology as an environmental predictor. *Diversity and Distributions*, 27(9):1818-1831. doi.org/10.1111/ddi.13371
10. Brooke, C., JM Martin, and **RA Short**. 2021. Peer writing groups as productivity, research, and support networks for extension agents. *Journal of the National Association of County Agricultural Agents*, 14(1). doi.org/10.5281/zenodo.4926388
9. Struminger, R, **RA Short**, J Zarestky, L Vilen^G, and AM Lawing. 2021. Biological field stations promote science literacy through outreach. *BioScience*, 71(9):953-963. doi.org/10.1093/biosci/biab057
8. **Short, RA**, LG Emmert, NA Famoso, JM Martin, JI Mead, S Swift, and A Baez. 2021. Paleobiology of a large mammal community from the late Pleistocene of Sonora, Mexico. *Quaternary Research*, 102:247-259. doi.org/10.1017/qua.2020.125
7. **Short, RA**, K Pinson^U, and AM Lawing. 2021. Comparison of environmental inference approaches for ecometric analyses: Using hypsodonty to estimate precipitation. *Ecology and Evolution*, 11(1):587-598. doi.org/10.1002/ece3.7081
6. **Short, RA**, R Struminger, J Zarestky, J Pippin^U, M Wong^U, L Vilen^G, and AM Lawing. 2020. Spatial inequalities leave micropolitan areas and Indigenous populations underserved by informal STEM learning institutions. *Science Advances*, 6(41):eabb3819. doi.org/10.1126/sciadv.abb3819

5. **Short, RA**, MY Van der Eb, and SR McKay. 2020. Effect of productive discussion on written argumentation in earth science classrooms. *Journal of Educational Research*, 113(1):46-58. doi.org/10.1080/00220671.2020.1712314
4. **Short, RA**, S Wallace, and LG Emmert. 2019. A new species of *Teleoceras* (Mammalia, Rhinocerotidae) from the late Hemphillian of Tennessee. *Bulletin of the Florida Museum of Natural History*, 56(5):183-260. <https://www.floridamuseum.ufl.edu/files/3315/5638/4988/Vol56No5archive.pdf>
3. Struminger, R, J Zarestky, **RA Short**, and AM Lawing. 2018. A framework for informal STEM education outreach at field stations. *BioScience*, 68(12):969-978. doi.org/10.1093/biosci/biy108
2. Emmert, LG, and **RA Short**. 2018. Three new procyonids from the Blancan of Florida. *Bulletin of the Florida Museum of Natural History*, 55(8):157-173. www.floridamuseum.ufl.edu/files/5015/2702/6955/vol55no8archive.pdf
1. Martin, JM, **RA Martin [Short]**, and JI Mead. 2017. Late Pleistocene and Holocene *Bison* of the Colorado Plateau. *The Southwestern Naturalist*, 62(1):14-28. doi.org/10.1894/0038-4909-62.1.14

OTHER PUBLICATIONS

5. **Short, RA**. 2021. Mass extinction. *AccessScience/McGraw-Hill*. <https://www.accessscience.com/content/mass-extinction/408560>
4. Struminger, R, J Zarestky, **RA Short**, L Vilen^G, and AM Lawing. 2021. Informal STEM learning at biological field stations. *Informalscience.org News & Views*, Center for Advancement of Informal Science Education. <https://www.informalscience.org/news-views/informal-stem-learning-biological-field-stations>
3. Martin, JM, **RA Short**, and JI Mead. 2018. Late Pleistocene and Holocene bison of the Colorado Plateau: Are bison native to the greater Grand Canyon area? *myFossil*, University of Florida. <https://www.myfossil.org/late-pleistocene-and-holocene-bison-of-the-colorado-plateau-are-bison-native-to-the-greater-grand-canyon-area/>
2. Martin, JM, and **RA Short**. 2018. At the crossroads of conservation: using the past to plan the future. *Bison Review, Western Bison Association Quarterly*.
1. Martin, JM, and **RA Martin [Short]**. 2016. Review of the “Higgs Bison”: Using genetics and cave art to understand *Bison* hybridization in Eurasia. *Bison Review, Western Bison Association Quarterly*. Reprinted: *National Bison Association Quarterly* (January 2017), *Minnesota Buffalo Association Monthly* (December 2016)

GRANTS AND FELLOWSHIPS

PENDING:	\$2,446,824
Martin, JM, AJ Leffler, L Perkins, and RA Short (co-PI). May 31, 2024 – May 30, 2027. “Bison, Bale Grazing, and BCS: Enhancing Capacity of Private and Indigenous Bison Producers through Train-the-Trainer Workshops and Practice Incentives for Winter Bale Grazing and Body Condition Scores,” USDA-NRCS Conservation Innovation Grant.	\$1,997,154
Short, RA (PI), and NS Fox. January 1, 2024 – December 31, 2026. “BRC-BIO: Advancing Conservation Paleobiology through Ecometrics: Integrating Functional	\$449,670

Traits and Environments of Past, Present, and Future Faunas,” Building Research Capacity of New Faculty in Biology, NSF DBI 2334543.

AWARDED:	<u>\$81,948,322</u>
Cammack, K, A Blair, H Menendez, J Brennan, K Ehlert, C Graham, R Short (co-PI), and J Martin. May 1, 2023 – April 31, 2028. “The Grass is Greener on the Other Side: Developing Climate-Smart Beef and Bison Commodities,” USDA-NRCS Partnerships for Climate-Smart Commodities. Fully matched by industry contributions.	\$80,000,000
Lawing, AM, JL McGuire, F Manthi, and JJ Head. Senior Personnel: RA Short and S Piñeda-Munoz. September 1, 2021 – August 31, 2024. “Collaborative Research: Vertebrate Functional Traits as Indicators of Ecosystem Function Through Deep and Shallow Time,” Joint funding from NSF DEB 2124836/2124770, and Natural Environment Research Council (UK) NE/W007576/1.	\$1,186,000
Heiberger, G, M Nepal, RA Short (co-PI), E Moore, and N Anderson. November 1, 2021 – October 31, 2023. “The Wokini Undergraduate Biology Education Network,” Research Coordination Network in Undergraduate Biology Education, NSF DBI 2120633.	\$74,944
Short, RA (PI). September 1, 2020 – August 31, 2022. “Functional Traits as Indicators of Community Structure and Function,” Postdoctoral Research Fellowship in Biology – Interdisciplinary Research Using Biological Collections, NSF DBI 2010680/2142395. Declined \$69,000 to accept faculty position	\$207,000
Short, RA . 2020. Open Access to Knowledge (OAK) Fund, University Libraries, Texas A&M University.	\$1,760
Short, RA . August 2019 – August 2020. Tom Slick Graduate Research Fellowship, College of Agriculture and Life Sciences, Texas A&M University	\$33,353
Short, RA . 2019. Graduate Student Research Grant, Ecosystem Science and Management, Texas A&M University	\$1,000
Short, RA . 2019. Data Science Graduate Travel Grant, Institute of Data Science, Texas A&M University	\$1,000
Short, RA . 2019. Graduate Student Travel Award, Ecosystem Science and Management, Texas A&M University	\$500
Short, RA . 2019. North American Paleontological Convention Student Travel Grant	\$350
Short, RA . 2018. Graduate Student Research Grant, Ecosystem Science and Management, Texas A&M University	\$1,000
Short, RA . 2018. Graduate Student Travel Award, Ecosystem Science and Management, Texas A&M University	\$500
Short, RA . 2018. Graduate and Professional Student Council Travel Award, Texas A&M University	\$500
Short, RA . 2018. Graduate Student Research and Presentation Grant, Association of Former Students and the Office of Graduate and Professional Studies, Texas A&M University	\$500

Struminger, RS, J Zarestky, and AM Lawing. August 2017 – July 2021. “Collaborative Research: Informal STEM Learning at Biological Field Stations,” Advancing Informal STEM Learning, NSF DRL 1713359 and NSF DRL 1713351; Role: Co-author, unable to be a PI because of graduate student status; Project website: https://fieldstationoutreach.info/	\$299,900
Short, RA. August 2017 – August 2018. Dishman-Lucas Graduate Research Assistantship, Ecosystem Science and Management, Texas A&M University	\$35,000
Short, RA. 2017. Jackson School of Geosciences Student Member Travel Grant, Society of Vertebrate Paleontology	\$400
Short, RA. August 2016 – August 2017. Merit Fellowship, College of Agriculture and Life Sciences, Texas A&M University	\$35,315
Short, RA. 2016. L.T. Jordan Fellowship, Jordan Institute for International Awareness, Texas A&M University. Declined because of change to proposed research.	\$1,500
Short, RA. 2012. Research Funding, Center of Excellence in Paleontology, East Tennessee Museum of Natural History	\$300
Short, RA. 2012. Research Funding, Geosciences, East Tennessee State University	\$300
Short, RA. August 2007 – May 2009. Alumni Scholarship, Illinois Wesleyan University	\$24,000
Short, RA. August 2005 – May 2009. Alumni Grant, Illinois Wesleyan University (4 years)	\$41,800
Short, RA. 2005. Peoria (IL) Elk’s Lodge #20 Scholarship	\$1,000
Short, RA. 2005. Grand View Chapter American Business Women’s Scholarship, Peoria, IL	\$400

INVITED TALKS

12. **Short, RA.** 2023. Advancing Conservation Paleobiology through Ecometrics: Integrating Functional Traits and Environments of Past, Present, and Future Faunas. Department of Geology and Geological Engineering, South Dakota School of Mines.
11. **Short, RA.** 2022. Communities of change: Advancing large mammal ecology and empowering STEM learners. Ecology, Evolution, and Behavior Program, Michigan State University.
10. **Short, RA.** 2022. Communities of change: Empowering STEM learners to advance large mammal ecology. Department of Natural Resource Management, South Dakota State University. Virtual.
9. **Short, RA, JL McGuire, and AM Lawing.** 2021. Trophically-integrated ecometric models highlight areas of functional disruption in mammal communities. PNAS Special Feature Roundtable. Virtual.
8. **Short, RA.** 2021. Mammal conservation through paleobiology and science education. Program for Ecology, Evolution, and Conservation, University of Illinois Urbana-Champaign. Virtual.
7. **Short, RA.** 2021. Learning from the past to prepare for the future. Wizipan Fall Program, The Indian University of North America and South Dakota State University.

6. **Short, RA.** 2019. What can we learn from a rhino in Tennessee? Rotary Club of Aggieland, Bryan/College Station, TX.
5. **Short, RA,** and AM Lawing. 2018. Comparison of inference approaches for ecometric analyses: Using hypsodonty to estimate precipitation. Seminar in Plant Ecology, Conservation, and Evolution, Texas A&M University.
4. Martin, JM, and **RA Short.** 2017. Paleo Research: MS to PhD. East Tennessee Museum of Natural History.
3. **Martin [Short], RA.** 2017. A History of *Teleoceras*. East Tennessee Museum of Natural History.
2. **Martin [Short], RA.** 2015. Does discussion affect students' written arguments? Maine Center for Research in STEM Education Research Group, University of Maine.
1. **Short, RA.** 2014. Rhinos: Then and now. Saturday Lunchtime Lecture Series, East Tennessee Museum of Natural History.

CONFERENCE PRESENTATIONS ^Uundergraduate student, ^Ggraduate student, and ^Ppostdoc authors
TALKS

28. Heiberger, G, **R Short,** W His Horse is Thunder, J TenBrink^G, and D Nelson^G. 2023. Wokini Undergraduate Biology Education Network: Exploring American Indian ways of knowing in biology education. 1st Annual SDSU Scholarship of Teaching and Learning Symposium. Brookings, SD.
27. **Short, RA,** M Sketel^U, JM Martin, JA Schap^G, JL McGuire, and AM Lawing. 2023. Presence of domestic and non-native species shifts trait-environment relationships in herbivorous mammal communities. American Society of Mammalogists. Anchorage, AK. Invited Symposium: *Emerging Leaders in the Study of Mammalian Responses to Changing Climates*
26. Lauer^G, D, AM Lawing, **R Short,** F Manthi, J Müller, J Head, and J McGuire. 2023. Disruption of trait-environment relationships in African megafauna occurred in the early Pleistocene. International Union for Quaternary Research. Rome, Italy.
25. Lawing, M, MA Hurtado Materon^G, D Lauer^G, C Mutinda^G, L Roberts^P, J Schap^G, L Siciliano-Martina^P, S Pineda Munoz, J Müller, **R Short,** F Manthi, J Head, and J McGuire. 2023. A new view: Multidimensional and time transgressive approaches to ecometrics. International Union for Quaternary Research. Rome, Italy.
24. Schap^G, J, J McGuire, M Lawing, and **RA Short.** 2023. Building ecometric models using small mammal hypsodonty to estimate paleoprecipitation across East Africa. International Union for Quaternary Research. Rome, Italy.
23. Cammack, K, A Blair, H Menendez, J Brennan, K Ehlert, C Graham, **R Short,** and J Martin. 2023. Implementation of Large-Scale Climate Smart Agriculture Practices and Research on Beef and Bison Grazing Lands. American Society of Animal Science. Albuquerque, NM.
22. Hurtado Materon^G, MA, J McGuire, **RA Short,** NSF-NERC Grant Team, and AM Lawing. 2023. What trait-environment relationships can tell us about ecological and evolutionary dynamics? Ecological Integration Symposium. College Station, TX.
21. **Short, RA,** M Sketel^U, JM Martin, JA Schap^G, JL McGuire, and AM Lawing. 2023. Assessing impact of domestic and non-native species on trait-environment relationships using hypsodonty and precipitation since the late Pleistocene. Conservation Paleobiology Symposium.

- Gainesville, FL. *Bulletin of the Florida Museum of Natural History* 60(2):116. doi.org/10.58782/flmnh.ueal3445
20. Lauer^G, DA, AM Lawing, **RA Short**, FK Manthi, J Müller, JJ Head, and JL McGuire. 2022. Pleistocene disruption of trait-environment relationships informs the future conservation of African megafauna. Conservation Paleobiology Symposium. Gainesville, FL. *Bulletin of the Florida Museum of Natural History* 60(2):95. doi.org/10.58782/flmnh.cpw5265
 19. Schap^G, JA, **RA Short**, and JL McGuire. 2022. Building ecometric models using small mammal hypsodonty to observe novel trait-environment relationships through time in Africa. Geological Society of America. Denver, CO. *Abstracts with Programs* 54(5). doi.org/10.1130/abs/2022AM-378040
 18. Schap^G, JA, **RA Short**, and JL McGuire. 2022. Building ecometric models using small mammal hypsodonty to observe novel trait-environment relationships through time in Africa. Society of Vertebrate Paleontology. Toronto, ON, Canada. *Journal of Vertebrate Paleontology*, Program and Abstracts: 296-297. https://vertpaleo.org/2022_svp_program-final/
 17. Lauer^G, DA, AM Lawing, **RA Short**, FK Manthi, J Müller, JJ Head, and JL McGuire. 2022. Disruption of trait-environment relationships in African megafauna coincident with hominin emergence. Society of Vertebrate Paleontology. Toronto, ON, Canada. *Journal of Vertebrate Paleontology*, Program and Abstracts, 2022, 214. https://vertpaleo.org/2022_svp_program-final/
 16. **Short, RA**, JL McGuire, PD Polly, and AM Lawing. 2022. Human impacts disrupt the functional relationship between traits and environment in large mammal communities. American Society of Mammalogists. Tucson, AZ. Abstract Book: 102-103. https://www.mammalsociety.org/uploads/ASM_2022_Abstracts-2022.06.13.pdf
 15. **Short, RA**, JL McGuire, and AM Lawing. 2022. Expanding ecometric analyses to explore geographic patterns of faunal responses to change. International Biogeography Society. Vancouver, BC, Canada. Conference Program Book: 50-51. <https://www.biogeography.org/wp-content/uploads/2022/07/Vancouver-Program-Book-updated.pdf>
 14. Martin, JM, **RA Short**, G Plumb, L Markewicz, D Van Vuren, B Wehus-Tow^G, E Otárola-Castillo, and ME Hill. 2022. Integrated evidence-based extent of occurrence for North American bison since 1500 CE and before. American Society of Mammalogists. Tucson, AZ. Abstract Book: 64-65. https://www.mammalsociety.org/uploads/ASM_2022_Abstracts-2022.06.13.pdf
 13. **Short, RA**, JL McGuire, and AM Lawing. 2021. Refining ecometric analyses to better integrate paleontology with ecology. 2nd Crossing the Paleontological-Ecological Gap. Virtual. Withdrawn from presentation.
 12. **Short, RA**, JL McGuire, and AM Lawing. 2021. Refining ecometric analyses to better understand human effects on functional trait-environment relationships in mammal communities. American Society of Mammalogists. Virtual.
 11. **Short, RA**, and AM Lawing. 2020. Locomotor morphology of ungulate communities as an environmental predictor. Society for Integrative and Comparative Biology. Austin, TX. Abstract Book:371.
 10. **Short, RA**, and AM Lawing. 2019. Community limb morphology of Artiodactyla as an environmental predictor. International Congress of Vertebrate Morphology. Prague, Czech Republic. *Journal of Morphology* 280(S1):S217.

9. **Short, RA**, and AM Lawing. 2019. Predicting paleoenvironment from community morphology of artiodactyl limbs to understand change through time. North American Paleontological Convention. Riverside, CA. *PaleoBios* 36(S1):323.
8. **Short, RA**, and AM Lawing. 2019. Limb morphology of large mammal communities as an environmental predictor. Ecological Integration Symposium. College Station, TX. Student Presentation Abstract Book:24.
7. **Short, RA**, and AM Lawing. 2018. Comparison of inference approaches for ecometric analyses: Using hypsodonty to estimate precipitation. Society of Vertebrate Paleontology. Albuquerque, NM. *Journal of Vertebrate Paleontology* Program and Abstracts:216.
6. Zarestky, J, R Struminger, J Rodriguez^G, **R Short**, and AM Lawing. 2018. Perspectives on informal learning: Cross-disciplinary concepts and a new venue for adult education. Adult Education Research Conference. Victoria, BC, Canada. Proceedings Paper: <http://newprairiepress.org/aerc/2018/papers/6>
5. **Short, RA**. 2018. Consistency of calcaneal gear ratio in *Odocoileus virginianus* (whitetail deer) and its potential as an ecometric in Artiodactyla communities. Ecological Integration Symposium. College Station, TX.
4. Van der Eb, MY, and **RA Martin [Short]**. 2016. Impacts of productive classroom discussion on student argumentation skills. Maine Center for Research in STEM Education Partnership Summit: Collecting Meaningful Evidence to Guide STEM Education Improvement. Northport, ME.
3. **Martin [Short], RA**. 2016. Discussion in Earth Science classrooms and its impact on students' written arguments. Maine Center for Research in STEM Education National Conference: Integrating STEM Education Research and Teaching. Orono, ME. (invited contributor)
2. **Martin [Short], RA**. 2016. Influence of productive talk discussions on written arguments in middle and high school science classes. University of Maine Graduate and Undergraduate Student Research Symposium. Bangor, ME.
1. **Short, RA**. 2012. Morphology of *Teleoceras* (Mammalia: Rhinocerotidae) from the Gray Fossil Site (Gray, Tennessee) with comparisons to other Hemphillian Species. Southeastern Association of Vertebrate Paleontology. Boone, NC.

WORKSHOPS & SESSIONS

12. Ten Brink^G, J, W His Horse is Thunder, **R Short**, and G Heiberger. 2023. Decolonizing Biology. American Indian Science and Engineering Society Region 5. Hayward, WI. Keynote and roundtable.
11. Pritchard, K and **R Short**. 2023. Identity formation and maintenance among *Bison* producers. Midwest Sociological Society. Minneapolis, MN. Roundtable.
10. **Short, R**, JM Martin, C Brooke, and J Zarestky. 2022. How to engage with science. National Bison Association. Denver, CO. Panel Discussion.
9. Struminger, R, J Zarestky, M Lawing, **R Short**, and L Vilen^G. 2021. Promoting conservation, environmental stewardship, and science literacy through outreach. Organization of Biological Field Stations Annual Meeting. Virtual. Concurrent Session.

8. Struminger, R, L Vilen^G, J Zarestky, AM Lawing, and **RA Short**. 2020. Informal environmental learning at biological field stations. North American Association of Environmental Education Research Symposium. Virtual. Concurrent Session.
7. Struminger, R, J Zarestky, M Lawing, **R Short**, and L Vilen^G. 2020. Outreach at biological field stations: Opportunities and impacts. Organization of Biological Field Stations Annual Meeting. Virtual. Moderated Session.
6. Zarestky, J, R Struminger, **RA Short**, AM Lawing, and L Vilen^G. 2018. Designing outreach: Aligning programs with field station priorities. Organization of Biological Field Stations Annual Meeting. Schoodic Institute at Acadia National Park, ME. Workshop.
5. Struminger, R, J Zarestky, **RA Short**, AM Lawing, and L Vilen^G. 2018. STEM outreach for diverse audiences. Organization of Biological Field Stations Annual Meeting. Schoodic Institute at Acadia National Park, ME. Moderated Session.
4. Vilen^G, L, J Zarestky, AM Lawing, **RA Short**, and R Struminger. 2018. Adult learning at biological field stations: Exploring non-formal and informal outreach programming and educator credentialing. American Association of Adult and Continuing Education Annual Conference. Myrtle Beach, SC. Concurrent Session.
3. Zarestky, J, R Struminger, J Rodriguez^G, **R Short-Martin**, and M Lawing. 2017. Outreach at field stations: Best practices for engaging participants. Organization of Biological Field Stations Annual Meeting. Itasca Biological Station and Laboratories, MN. Workshop.
2. Struminger, R, J Zarestky, M Lawing, and **R Short-Martin**. 2017. STEM outreach. Organization of Biological Field Stations Annual Meeting. Itasca Biological Station and Laboratories, MN. Moderated Session.
1. ByersSmall, B, M Van der Eb, and **RA Martin [Short]**. 2017. Using Productive Talk in middle and high school classes to get the most out of classroom discussions. National Conference on Science Education, National Science Teachers Association. Los Angeles, CA. Workshop.

POSTERS

12. Sketel^U, M, J Schap^G, **RA Short**, JL McGuire. 2023. Describing a newly excavated packrat midden near Natural Trap Cave, WY to help assess biases in fossil microfaunal accumulation. Conservation Paleobiology Symposium. Gainesville, FL. *Bulletin of the Florida Museum of Natural History* 60(2):117. doi.org/10.58782/flmnh.dsqa9692
11. Sethna^U, J, R Struminger, J Zarestky, L Vilen^G, AM Lawing, and **RA Short**. 2021. Leveraging place-based learning at biological field stations to advance science literacy among different audiences. Ecological Society of America. Virtual.
10. Pinson^U, K, **R Short**, and M Lawing. 2020. Comparison of inference approaches for ecometric analysis. Ecological Integration Symposium. College Station, TX.
9. **Short, RA**, L Vilen^G, J Rodriguez^G, J Zarestky, R Struminger, and AM Lawing. 2018. Informal E-STEM learning at biological field stations: A conceptual framework. North American Association of Environmental Education Research Symposium. Spokane, WA.
8. **Short, RA**, R Struminger, J Zarestky, and AM Lawing. 2018. A wiki for informal learning at field stations. Organization of Biological Field Stations. Schoodic Institute at Acadia National Park, ME.

7. Vilen^G, L, **RA Short**, J Zarestky, R Struminger, and AM Lawing. 2018. Adult learning at field stations: Informal outreach programming and professional development. Organization of Biological Field Stations. Schoodic Institute at Acadia National Park, ME.
6. **Short-Martin, RA**, LG Emmert, NA Famoso, JI Mead, and SL Swift. 2017. Perissodactyla, non-ruminant Artiodactyla, and Carnivora from the late Pleistocene of Térapa, Sonora, Mexico. Society of Vertebrate Paleontology. Calgary, AB, Canada. *Journal of Vertebrate Paleontology* Program and Abstracts:194.
5. **Martin [Short], RA**. 2016. Discussion in middle and high school Earth Science classrooms and its impact on students' abilities to construct evidence-based arguments in their written work. Maine Center for Research in STEM Education National Conference: Integrating STEM Education Research and Teaching. Orono, ME.
4. **Martin [Short], RA**. 2015. Using Productive Talk to improve students' written work in middle and high school science classes. Maine Center for Research in STEM Education Partnership Summit. Carrabassett Valley, ME.
3. **Martin [Short], RA**. 2015. Does Productive Talk improve students' abilities to use evidence to support claims in their written work?: A pilot study. Maine Center for Research in STEM Education Summer Conference: Teaching, Learning, and Assessment in the Context of the Next Generations Science Standards and the Common Core State Standards in Mathematics. Orono, ME.
2. Wallace, S, B Schubert, J Mead, **R Short**, J Doby, and S Swift. 2014. Recent finds from the Latest Miocene/Early Pliocene Gray Fossil Site Lagerstätten of Eastern Tennessee, Southern Appalachians, USA. Society of Vertebrate Paleontology. Berlin, Germany. *Journal of Vertebrate Paleontology* Program and Abstracts:251.
1. **Short, R**, and S Wallace. 2013. A new *Teleoceras* from the Late Hemphillian of the Southeast. Society of Vertebrate Paleontology. Los Angeles, CA. Withdrawn from presentation.

DATASETS

4. **Short, R**, JL McGuire, DP Polly, and AM Lawing. 2023. Trophically integrated ecometric models as tools for demonstrating spatial and temporal functional changes in mammal communities: Dataset. FigShare. doi.org/10.6084/m9.figshare.19358513.v1
3. Martin, JM, **RA Short**, GE Plumb, L Markewicz, DH Van Vuren, B Wehus-Tow^G, E Otárola-Castillo, and ME Hill. 2022. Integrated evidence-based extent of occurrence for North American bison (*Bison bison*) since 1500 CE and before: Dataset. FigShare. <https://doi.org/10.6084/m9.figshare.19314455>.
2. **Short, RA**, and AM Lawing. 2021. Geography of artiodactyl locomotor morphology as an environmental predictor. Dryad Dataset. <https://doi.org/10.5061/dryad.kh189323p>
1. **Short, RA**, K Pinson^U, and AM Lawing. 2021. Comparison of environmental inference approaches for ecometric analyses: Using hypsodony to estimate precipitation. Dryad Dataset. <https://doi.org/10.5061/dryad.cz8w9gi0t>

TEACHING EXPERIENCE

SOUTH DAKOTA STATE UNIVERSITY

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| Fall 2023 | AIS 498: Undergraduate Research and Scholarship (14 students)
NRM 110: People and the Environment (14 students) |
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RANG 750: Grazing Ecology and Management (18 students)
 WL 491: Independent Study (1 student)

Fall 2022 AIS 498: Undergraduate Research and Scholarship (13 students)

TEXAS A&M UNIVERSITY

Spring 2018, 2019 Teaching Assistant, ESSM 462: Advanced GIS for Natural Resource Management (writing intensive course, 7-9 students/semester)

UNIVERSITY OF MAINE

Summer 2015 Instructor, Elementary Sciences Partnership Summer Institute: Life Sciences, Maine Center for Research in STEM Education, University of Maine (professional development for K-12 science teachers)

Spring 2015 Teaching Assistant, BIO 335: Human Anatomy, University of Maine (dissection-based course, 3 sections, 60 students)

EAST TENNESSEE STATE UNIVERSITY

Summer 2014 Instructor, Summer Paleo Camp, East Tennessee Museum of Natural History (PreK-8, NGSS-aligned curriculum design and instruction)

Spring 2012 Teaching Assistant, GEOL 3395: Vertebrate Paleontology (responsible for redesigning curriculum, 6 students)

Teaching Assistant, GEOL 3700: Geosciences Field Experience – Rio Grande Rift Valley (included travel with students, 12 students)

Fall 2011 Teaching Assistant, GEOL 1040: Physical Geology (online course, 2 sections, 102 students)

Teaching Assistant, GEOG 1120: Earth Science: Landforms and Processes (online course, 78 students)

STUDENTS MENTORED *co-author on publication or presentation

SOUTH DAKOTA STATE UNIVERSITY

Bree Eastman, undergraduate researcher (fall 2023 – present)

Sarah Gheida, MS graduate student, committee chair (fall 2023 – present)

Charlie Bruce, PhD graduate student, committee chair (fall 2023 – present)

Hayden Wolfe, MS graduate student, committee member (fall 2022 – present)

GEORGIA INSTITUTE OF TECHNOLOGY

*Julia Schap, PhD graduate student (fall 2020 – present)

*Michael Sketel, undergraduate researcher (fall 2021 – present)

*Jadyn Sethna, undergraduate researcher (fall 2020 – spring 2021), volunteer researcher (summer 2021 – present)

TEXAS A&M UNIVERSITY

Maria Alejandra Hurtado Materon, PhD graduate student, committee member (Fall 2022 – present)

*Katherine Pinson, undergraduate researcher (fall 2019 – fall 2020)

Emily O’Dea, undergraduate volunteer (spring 2019 – fall 2019)

*James Pippin, undergraduate project, ESSM 464: Spatial Project Management (spring 2019)

*Minna Wong, undergraduate project, ESSM 464: Spatial Project Management (spring 2019)

Maria Ferraro, undergraduate researcher (spring 2018 – fall 2018)

Steven Kyle Brown, undergraduate intern (spring 2018 – fall 2018)

UNIVERSITY OF MAINE

John Seekins, Undergraduate STEM Education Professional Program (summer 2016)

Casey Wilkins, graduate student researcher (summer 2016)

EAST TENNESSEE STATE UNIVERSITY

Will Harris, graduate student assistant (summer 2014)

SERVICE EXPERIENCE

ONGOING

Fall 2023 – present	Hiring Committee, Rangeland Ecology and Management, Natural Resource Management, South Dakota State University
Fall 2023 – present	Hiring Committee, Plant Conservation Biology/Herbarium Director, Natural Resource Management, South Dakota State University
Fall 2023 – present	Assessment Committee, Natural Resource Management, South Dakota State University
Fall 2022 – present	Undergraduate Curriculum Committee, Natural Resource Management, South Dakota State University
May 2023 – present	2024 Biannual Meeting Conference Committee (Prague, CZ), International Biogeography Society

COMPLETED

August 2023	External Evaluator, AgriLife Research Hatch Project, Texas A&M University
Summer 2023	Admissions Committee, Wizipan Leadership and Sustainability Program, Indian University of North America, Crazy Horse
Summer 2023	Student Travel Grant Reviewer, Conservation Paleobiology Network
Spring 2023	Hiring Committee, West River Research and Extension Secretary
February 17-20, 2023	Session Moderator, Faculty Mentor, and Student Luncheon Mentor, Conservation Paleontology Network meeting

January 19, 2023	Invited Guest, Large Mammal Ecology WL 417/517, Natural Resource Management, South Dakota State University
Fall 2022	Precision Ag Connectivity Taskforce, South Dakota State University
March 3, 2022	Interview Guest, ExploreCode, Los Angeles, CA
February 11, 2022	Video Guest, International Day of Women and Girls in Science, National Buffalo Museum, Jamestown, ND
October 2021, March 2022	Abstract Review Committee, International Biogeography Society
June 14-18, 2021	Student Presentation Evaluator, American Society of Mammalogists, Virtual Conference
2020 – 2021	Postdoctoral Member, Climate, Diversity, Equity, and Inclusion Committee, Ecology and Conservation Biology, Texas A&M University
February 14, 2020	Outreach volunteer, Darwin Day, Texas A&M University
April 22-26, 2019	Host, Abigail Parker, Visiting PhD student from the University of Cambridge
2018	Invited Graduate Student Representative, Ecosystem Science and Management Hiring Committee, Texas A&M University
April 8, 2018	Day Trip, ESSM 304: Rangeland Plant Taxonomy, Texas A&M University
February 6, 2018	Invited Moderator, Ecosystem Science and Management Seminar Panel Discussion, Texas A&M University
2017 – 2021	Co-founder and organizer, “The Write Stuff” Writing Group
2017 – 2018	Co-Chair, Ecosystem Science and Management Seminar Committee, Texas A&M University (3 semesters)
October 5, 2017	Guest Speaker, GEOS 2450: Paleontological Techniques, East Tennessee State University
March 24, 2017	Moderator, Ecological Integration Symposium, Texas A&M University
2016 – 2019	Speaker Host, Ecosystem Science and Management Seminar, Texas A&M University <ul style="list-style-type: none">• Dr. Kelley Crews, University of Texas• Dr. Lynn Wingard, United States Geological Survey• Dr. Felicia Keesing, Bard College• Dr. Melinda Harm Benson, University of New Mexico• Dr. Dorothy Peteet, Columbia University
2016	Mentor, Undergraduate STEM Education Professional Program, Maine Center for Research in STEM Education, University of Maine
April 27, 2016	Presentation Judge, University of Maine Graduate and Undergraduate Student Research Symposium, Bangor, ME
June 26, 2015	Graduate Assistant, Climate Science in the Classroom: Teacher Workshop, Climate Change Institute, University of Maine

May 7, 2015	Invited Panelist, Girls in Science: Paleontology, Center for Science, Teaching and Learning, Rockville Centre, NY
2013	Temporary Exhibit Design, East Tennessee Museum of Natural History
2012 – 2013	Graduate Student Representative, Development and Promotion Committee, East Tennessee Museum of Natural History
2011 – 2013	Tour Guide and Outreach Volunteer, East Tennessee Museum of Natural History
2010 – 2011	Tour Guide and Outreach Volunteer, Museum of Geology, Rapid City, SD
2008 – 2009	Student Mentor, Biology, Illinois Wesleyan University
2004 – 2005	Representative, East Peoria Community High School, Heart of Illinois United Way Youth Leadership Committee

JOURNAL REVIEWS

Ecography, Palaeontologia Electronica, Proceedings of the National Academy of Sciences, Ecology and Evolution, Bioscience

HONORS AND AWARDS

2017 – 2018	Outstanding PhD Student, Ecosystem Science and Management, Texas A&M University
2012 – 2013	Graduate Student of the Year, Geosciences, East Tennessee State University

MEMBERSHIPS

American Society of Mammalogists, International Biogeography Society, International Society for Vertebrate Morphology, Society of Integrative and Comparative Biology

TRAININGS AND WORKSHOPS

August 2022 – July 2023	Center for the Enhancement of Teaching and Learning Professional Development Certificate, South Dakota State University
January 25 – 26, 2023	Estimating Biogeographic History with BioGeoBEARS and PhyBEARS, International Biogeography Society
August 6 – 13, 2022	NSF Grant Writing Workshop, National Science Foundation and Rocky Mountain Biological Laboratory
April – May, 2022	Using the Rules of Life to Address Societal Challenges, National Science Foundation (included Postdoc Incubator events)
March 21 – April 1, 2022	Care and Management of Natural History Collections, Transmitting Science
February 21 – 25, 2022	Analytical Paleobiology in R, Physalia Courses
December 7 – 10, 2021	Instructor Training, The Carpentries
Fall 2021	Function Trait Resource for Environmental Studies (FuTRES) 2021 Workshop (meeting once a month for five months)

June 14, 2021	CURES – Course-based undergraduate research experiences, American Society of Mammalogists
January 11 – 15, 2021	3D geometric morphometrics – 13 th edition, Transmitting Science
March 15 – 19, 2021	Mapping and spatial analysis (GIS) with R, Physalia Courses
September 4, 2020	GreenDot Bystander Training
August 11 – 13, 2020	Function Trait Resource for Environmental Studies (FuTRES) 2020 Workshop
October 16, 2018	Neotoma Paleocology Database: Facilitating transparent data curation in vertebrate paleontology, Society of Vertebrate Paleontology

COLLECTIONS AND FIELD EXPERIENCE

2023	Collections: Museum of Geology, Rapid City, SD; Florida Museum of Natural History, Gainesville, FL
2022	Collections: Museum of Geology, Rapid City, SD; Smithsonian Museum of Natural History, Washington, DC Field: Snake River Fossil Site, Becker, MN
2021	Collections: Museum of Geology, Rapid City, SD Field: Snake River Fossil Site, Becker, MN; Natural Trap Cave, Lovell, WY
2019	Collections: The Natural History Museum, London, UK; La Specola, Florence, Italy; National Museums of Kenya, Nairobi, Kenya; Denver Museum of Nature and Science, Denver, CO Field: Snake River Fossil Site, Becker, MN
2018	Collections: Smithsonian Museum of Natural History, Washington, DC; Museum für Naturkunde, Berlin, Germany
2017	Collections: Texas Vertebrate Paleontology Collections, Austin, TX; East Tennessee Museum of Natural History, Gray, TN; Illinois State Museum, Springfield, IL
2016	Collections: Illinois State Museum, Springfield, IL
2015	Classroom Observations: 9 th grade Earth Science, Hermon, ME; 5 th grade Science Dedham, ME
2013	Collections: Museum of Northern Arizona, Flagstaff, AZ; Grand Canyon National Park Museum Collections, AZ; Florida Museum of Natural History, Gainesville, FL Field: Saltville Fossil Site, Saltville, VA
2012	Collections: Sternberg Museum of Natural History, Fort Hays, KS; Denver Museum of Nature and Science, Denver, CO; American Museum of Natural History, New York City, NY; Smithsonian Museum of Natural History, Washington, DC; Florida Museum of Natural History, Gainesville, FL Field: Saltville Fossil Site, Saltville, VA
2011 – 2014	Collections/Field/Lab: East Tennessee Museum of Natural History, Gray, TN (graduate student assistant)
2010 – 2011	Collections/Lab: Museum of Geology, Rapid City, SD (student worker)

2010 Field: Fossil Lake, OR (field camp)

MEDIA COVERAGE

13. Short et al. 2023. *Proceedings of the National Academy of Sciences*
 - News@SDState: <https://www.sdstate.edu/news/2023/03/fossil-records-can-help-future-conservation-efforts>
 - *The Brookings Register* (Brookings, SD): <https://brookingsregister.com/article/fossil-records-can-help-with-future-conservation-efforts>
 - South Dakota Public Broadcasting Radio: <https://listen.sdpb.org/science/2023-03-31/what-past-climate-change-reveals-about-the-currently-warming-world>
 - AgriLife Today: <https://agrifiletoday.tamu.edu/2023/02/08/special-feature-looks-at-history-for-biodiversity-conservation/>
12. “\$80 million Partnerships for Climate-Smart Commodities Initiative.” News@SDState. March 6, 2023, <https://www.sdstate.edu/news/2023/03/80-million-partnerships-climate-smart-commodities-initiative-grant-among-largest-usda>
 - *The Brookings Register*: <https://brookingsregister.com/article/sdsu-to-receive-nearly-80m-for-the-partnerships-for-climate-smart-commodities-initiative>
 - South Dakota Public Broadcasting Radio: <https://listen.sdpb.org/environment/2022-09-16/sdsu-receives-historic-grant-for-climate-friendly-livestock-commodities>
11. Short et al. 2020. *Science Advances*
 - Texas A&M Today: <https://today.tamu.edu/2020/10/21/areas-of-us-lack-equitable-access-to-informal-stem-learning-study-says/>
 - Research @ Texas A&M: <https://research.tamu.edu/2020/10/14/parts-of-us-lack-equitable-access-to-informal-stem-learning-study-says/>
 - Department of Ecology and Conservation Biology: <https://eccb.tamu.edu/texas-am-researchers-advocate-for-stem-access-equity/>
 - AgriLife Today: <https://agrifiletoday.tamu.edu/2020/10/09/texas-am-researchers-advocate-for-equity-in-stem-access/>
 - Colorado State University Communications: <https://chhs.source.colostate.edu/researchers-examine-equitable-stem-access-for-communities-in-underserved-areas/>
10. “Texas A&M researcher using new methods to investigate biodiversity in mammals.” Carrie Baker. AgriLife Today. September 11, 2020, <https://agrifiletoday.tamu.edu/2020/09/11/texas-am-researcher-using-new-methods-to-investigate-biodiversity-in-mammals/>
 - Also: *The Eagle* (Bryan, TX), *The Marlin Democrat* (Marlin, TX)
9. Invited Guest, “Conservation paleontology.” Common Descent Podcast. May 27, 2020, <https://commondescentpodcast.podbean.com/e/live-chat-conservation-paleontology/>
8. “Rhinos of Gray.” Gray Fossil Site Stories. May 20, 2020, <https://www.youtube.com/watch?v=L5BbBEfJYSg>
7. Invited Guest, “Episode 4: Gray Fossil Site rhinos.” Paleo Talks. May 1, 2020, <https://www.youtube.com/watch?v=wca1M7JG2QA>
6. “This Week’s Speaker.” *The Weekly Star*, Rotary Club of Aggieland. September 30, 2019
5. Short et al. 2020. *Bulletin of the Florida Museum of Natural History*.

- East Tennessee State University: https://www.etsu.edu/news/2019/05-may/nr_gfs_rhino.aspx
 - Also: WJHL-TV (Tri-Cities, TN), *Johnson City Press* (TN), *East Tennessee State University Today*
 - AgriLife Today: <https://today.agrilife.org/2019/05/15/texas-am-student-identifies-unique-5-million-year-old-rhino-species/>
 - Also: *The Eagle* (Bryan, TX), *Illinois Wesleyan University Magazine*
4. Invited Guest, “Episode 28: I think I took a wrong turn in Albuquerque.” A Touch of Gray Podcast. October 19, 2018, <https://atouchofgraypodcast.podbean.com/e/a-touch-of-gray-episode-28-i-think-i-took-a-wrong-turn-in-albuquerque/>
 3. Struminger et al. 2018. *BioScience*.
 - AgriLife Today: <https://today.agrilife.org/2018/10/10/texas-am-team-proposes-using-research-stations-across-u-s-for-public-stem-education/>
 2. Invited Guest, “Episode 20: And the winner is...Rhinos.” A Touch of Gray Podcast. August 24, 2018, <https://atouchofgraypodcast.podbean.com/e/and-the-winner-is-rhinos/>
 1. Guest Blog Post, “World Rhino Day!” *Bison@Large: A Blog*. September 22, 2016, <https://bisonjeff.weebly.com/bisonlarge-blog/world-rhino-day>