

TARA M. SMILEY

Environmental Resilience Institute • Indiana University
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EDUCATION

PhD	University of Michigan, Department of Earth and Environmental Sciences, August 2016 <i>Thesis:</i> Diversity dynamics and ecology of small mammals in relation to the Neogene tectonic and climate history of western North America
BSc	University of Washington, Ecology and Evolutionary Biology, with Honors, June 2007
BSc	University of Washington, Earth and Space Sciences, with Honors, June 2007

APPOINTMENTS & EXPERIENCE

2018-current	Research Fellow, Environmental Resilience Institute, Indiana University
2018-current	Assistant Research Scientist, Earth and Atmospheric Sciences, Indiana University
2016-2018	NSF Postdoctoral Fellow in Biology – Biological Collections, Department of Integrative Biology, Oregon State University
2011-2016	NSF Graduate Research Fellow, Museum of Paleontology, University of Michigan
2014-2015	Researcher-in-residence, Stable Isotopes Ratio Facility for Environmental Research, University of Utah
2010-2013	Graduate Student Instructor, Earth and Environmental Sciences, University of Michigan
2008-2010	US Peace Corps Volunteer, Environmental Education, Madagascar and Tanzania

FELLOWSHIPS, GRANTS, & AWARDS**FELLOWSHIPS**

2018-2022	Stable Isotope Ecology Research Fellow, Environmental Resilience Institute, Indiana Univ.
2016-2018	Postdoctoral Fellowship in Biology – Biological Collections, National Science Foundation
2017	Science Communication Fellowship, Oregon Museum of Science & Industry
2015-2016	Rackham Predoctoral Dissertation Fellowship, University of Michigan
2012-2015	Graduate Research Fellowship, National Science Foundation
2014	Stewart R. Wallace Fellowship, Dept. of Geology, University of Michigan
2010-2011	Slawson Fellowship, Dept. of Geology, University of Michigan
2005-2007	Mary Gates Research Scholarship, University of Washington
2002-2004	Mary Gates Honors Achievement Scholarship, University of Washington

RESEARCH GRANTS

2017-2022	Research Coordination Network Grant, National Science Foundation Division of Environmental Biology (Co-author & Steering Committee member) "Mammal diversification in relation to dynamic landscapes" (PI Catherine Badgley, UM; Co-PI Edward Davis, UO; Co-PI Brett Riddle, UNLV)	\$495,276
2017-2019	MacroSystems Biology & Early NEON Science Grant, National Science Foundation (Co-author & Postdoctoral Researcher) "Mice-o-scapes: using isotopes to understand the effect of climate and landscape change on small-mammal ecology over the past 100 years" (PI Jennifer Cotton, CSUN; Co-PI Rebecca Terry, OSU)	\$299,676

2016-2018	Postdoctoral Research Fellowship Biology – Biological Collections, National Science Foundation (PI)	\$138,000
2014-2015	Inter-university Training for Continental-scale Ecology Research-in-Residency Grant, University of Utah (Advisor: Thure Cerling)	\$6,000
2014	Anna Olcott Smith Award for Women Graduate Students, University of Michigan	\$6,000
2013	Society of Vertebrate Paleontology Patterson Memorial Award for Fieldwork	\$2,000
2011-2014	Turner Research Grant (x5), Dept. of Geology, University of Michigan	<i>total</i> \$7,900
2011-2015	Rackham Conference Travel Grant (x5), University of Michigan	<i>total</i> \$3,250
2013	Rackham Graduate Student Research Grant, University of Michigan	\$3,000
2011	Rackham Spring/Summer Research Grant, University of Michigan	\$6,000

AWARDS & HONORS

2016	Case Award for best student paper, University of Michigan Museum of Paleontology
2016	Student Travel Award, American Society of Mammalogy
2015	Student Travel Award, Cleveland Museum of Natural History Paleoeology Symposium
2015	Best student talk award, Desert Research Symposium
2007	Seattle Mineral and Lapidary Research Award
2006, 2007	Undergraduate Service Award, Earth & Space Sciences Dept., University of Washington

PUBLICATIONS

(*indicates Undergraduate Advisee)

IN PRESS, REVISION, & REVIEW

Barido-Sottani, J, E Saupe, **Smiley, TM**, LC Soul, A Wright, & RC Warnock. *In revision*. Seven rules for simulations in paleobiology. *Paleobiology*.

PUBLISHED

(13) **Smiley, TM**, PO Title & ML Zelditch, & RC Terry. 2020. Multi-dimensional biodiversity hotspots and the future of taxonomic, ecological and phylogenetic diversity: a case study of North American rodents. *Global Ecology and Biogeography*.

(12) Becker, DJ, KM Talbott, **TM Smiley**, KL Clark, P Sauer, & ED Ketterson. 2019. Leukocyte profiles vary between sympatric residents and overwintering migrant songbirds and with infection status following fall migration. *Animal Migration* 6: 28-40.

(11) Blumenthal, S, TE Cerling, **TM Smiley**, C Badgley, & TW Plummer. 2019. Isotopic records of climate seasonality in equid teeth. *Geochimica et Cosmochimica Acta* 260: 329-348.

(10) **Smiley, TM**. 2018. Detecting diversification processes in relation to preservation and tectonic history from simulated fossil records. *Paleobiology* 44(1): 1-24. (Featured article & Editor's selection for Open Access)

(9) Badgley, C, **TM Smiley**, & R Cable. 2018. Mountains, climate, and mammals, in *Mountains, Climate, and Biodiversity* (eds. C. Hoorn and A. Antonelli), p. 201-216. John Wiley and Sons Ltd, Chichester.

(8) **Smiley, TM**, EG Hyland, JM Cotton, & RE Reynolds. 2018. Early evidence of C₄ grasses, precipitation variability, and faunal response during the Miocene Climatic Optimum in the Mojave region. *Palaeogeography, Palaeoclimatology, Palaeoecology* 490: 415-430.

- (7) Badgley, C, **TM Smiley**, et al. (17 co-authors) 2017. Biodiversity and topographic complexity: Modern and geohistorical perspectives. *Trends in Ecology & Evolutionary Biology* 32(3): 211-226.
- (6) **Smiley, TM**, & RC Terry. 2017. Paleoeecology: methods. Invited article for *Encyclopedia of Life Sciences*, John Wiley and Sons Ltd, Chichester.
- (5) **Smiley, TM**. 2016. Changes in small-mammal diversity and ecology in relation to landscape and climate change over the Neogene. *Frontiers of Biogeography* 8(4): e32713.
- (4) **Smiley, TM**, JM Cotton, C Badgley, & TE Cerling. 2015. Small-mammal isotope ecology tracks climate and vegetation gradients across western North America. *Oikos* 125: 1100-1109.
- (3) Badgley, C, **TM Smiley**, & JA Finarelli. 2014. Great Basin mammal diversity in relation to landscape history. *Journal of Mammalogy* 95(6): 1090-1106.
- (2) Prothero, DR, E Draus, EA Nesbitt, **TM Smiley**, & C Burns. 2009. Paleomagnetism and tectonic rotation of the Eocene-Oligocene rocks of the Quimper Peninsula, northeastern Olympic Peninsula, Washington, *Newsletters on Stratigraphy*, 43(2): 127-138.
- (1) **Smiley, T**, C Sidor, A Maga, & O Ide. 2008. The vertebrate fauna of the Upper Permian of Niger. VI. First Evidence of a Gorgonopsid Therapsid. *Journal of Vertebrate Paleontology* 28(2): 543-547.

IN PREPARATION

Smiley, TM, C Badgley, WE Holt, A Bahadori & ET Rasbury. Tectonic extension influences Neogene mammal diversity in western North America. *In preparation for Nature Geosciences*.

Smiley, TM, M Moroz*, C Badgley & TE Cerling. Ecological response to environmental change: insights from the Miocene small-mammal record. *In preparation for Proceedings of the Royal Society-B*.

Smiley, TM, JM Cotton, NR Packard*, M Jimenez* & RC Terry. Mice-o-scapes: Using isotopes to understand the effects of climate and landscape change on small-mammal ecology over the past century. *In preparation*.

INVITED TALKS & SEMINARS

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| 2019 | Diversity responses to landscape change in the Basin and Range Province: tectonics influence macroevolutionary dynamics and faunal structure in Neogene mammals. Department of Evolution, Ecology, and Organismal Biology Seminar, Ohio State University, Columbus, OH |
| 2019 | Mountains as biodiversity hotspots: perspectives from the modern and fossil records. Committee on Evolutionary Biology Evolutionary-Morphology Seminar, University of Chicago, Chicago, IL |
| 2019 | Diversity in a changing landscape: linking the Neogene fossil record of North American mammals with tectonics and climate. School of Geological Sciences Colloquium, University of South Florida, Tampa, FL |
| 2018 | Ecology and evolution of mammals in relation to Neogene tectonic and climate history. Department of Ecology and Evolution Seminar, Stony Brook University, Stony Brook, NY |
| 2018 | Mountains & mammals: linking landscape and climate change to diversity in the Neogene fossil record. Geological Sciences Department Seminar, California State University Northridge, CA |

- 2018 Diversity dynamics of small mammals in relation to the Neogene tectonic and climate history of western North America. Earth Sciences Department Seminar, University of Oregon, Eugene, OR
- 2017 Mountains & mammals: linking landscape and climate change to diversification in Neogene rodents. Integrative Biology Department Seminar, Oregon State University, Corvallis, OR
- 2017 Why is the Great Basin so diverse? A paleontological perspective. Fern & J.L. Crawford Lecture Series, Zion Canyon Field Institute, Springdale, UT
- 2017 Diversity dynamics and ecology of small mammals in relation to the Neogene tectonic and climate history of western North America. Burke Museum, University of Washington, Seattle, WA

CONFERENCE PRESENTATIONS, ABSTRACTS & PAPERS

(*indicates Undergraduate Advisee)

Smiley, TM, C Badgley, A Bahadori, R Feng, WE Holt, KM Loughney, & RC Terry. 2019. Diversity responses to landscape change in the Basin and Range Province: Tectonics influence macroevolutionary dynamics and faunal structure in mammals over the Neogene. *American Geophysical Union*, San Francisco, CA. (invited talk)

Smiley, TM, JM Cotton, NR Packard, M Jimenez*, & RC Terry. 2019. Mice-oscapes: Using isotopes to understand the effects of climate and landscape change on small-mammal ecology over the past century. *Ecological Society of America*, Louisville, KY. (talk)

Smiley, TM, A Bahadori, WE Holt, T Rasbury, & C Badgley. 2019. Basin and Range tectonics drive diversification dynamics in North American mammals. *North American Paleontological Convention*, Riverside, CA. (talk)

Smiley, TM, RC Terry, C Badgley, A Bahadori, WE Holt, & T Rasbury. 2018. Were mountain passes higher in the Middle Miocene? *Society of Vertebrate Paleontology*, Albuquerque, NM. (talk)

Smiley, TM, M Moroz*, C Badgley, & TE Cerling. 2017. Ecological response to environmental change: insights from the Miocene small-mammal record of southern California. *Geological Society of America*, Seattle, WA. (talk)

Smiley, TM, C Badgley, RC Terry, EB Davis, B Riddle, B Yanites, J Finarelli & S Hopkins. 2017. Biodiversity and topographic complexity: modern and geohistorical perspectives. *Evolution*, Portland, OR. (talk)

Smiley, TM. 2017. Detecting diversification process in relation to tectonic activity from an incomplete fossil record. *International Biogeography Society*, Tucson, AZ. (talk)

Badgley, C, **TM Smiley**, WE Holt, A Bahadori & ET Rasbury. 2017. Mammal diversification tracks landscape history in the Great Basin of western North America. *International Biogeography Society*, Tucson, AZ. (talk)

A Bahadori, WE Holt, ET Rasbury, L Liu, L Flesch, C Badgley, **TM Smiley** & R Smith. 2016. Reconstruction of topography and lithosphere dynamics within the Basin and Range of western North America since 36 Ma. *American Geophysical Union*, San Francisco, CA. (talk)

Smiley, TM. Mountains and mammals: linking landscape and climate change to diversification in Neogene rodents. *Society of Vertebrate Paleontology*, Salt Lake City, UT. (talk in Romer Prize session)

Moroz, M*, **TM Smiley**, & C Badgley. 2016. Ecological response of small-mammal assemblages to environmental change over the Miocene Climatic Optimum in southern California. *Society of Vertebrate Paleontology*, Salt Lake City, UT. (Finalist in the Colbert Student Prize poster session)

Badgley, C, **TM Smiley**, WE Holt, & ET Rasbury. 2016. Great Basin mammal diversity and tectonic history. *Society of Vertebrate Paleontology*, Salt Lake City, UT. (talk)

Smiley, TM, L McQuarter*, & C Badgley. 2016. Geometric-morphometric analysis of *Dipodomys ordii* dentition: shape change along environmental and climatic gradients. *American Society of Mammalogy*, Minneapolis, MN. (Invited poster for symposium "Morphometric Approaches to Studying Mammalian Evolution and Ecology")

Moroz, M*, **TM Smiley**, & C Badgley. 2016. Variation in dental morphology among heteromyid rodents in present-day and fossil communities. *American Society of Mammalogy*, Minneapolis, MN. (poster)

Smiley, TM, & C Badgley. 2015. Patterns of Miocene mammalian diversity across spatial scales in the Great Basin of western North America. *Society of Vertebrate Paleontology*, Dallas, TX. (talk)

Moroz, M*, **TM Smiley**, & C Badgley. 2015. Variation in dental morphology of modern and fossil heteromyid assemblages. *Society of Vertebrate Paleontology*, Dallas, TX. (poster)

Smiley, TM, C Badgley, & TE Cerling. 2015. Dietary ecology of diverse Miocene rodent faunas from the Mojave region based on *in situ* stable isotope analysis. *Cleveland Museum of Natural History Paleoecology Symposium*, Cleveland, OH. (poster)

Smiley, TM, EG Hyland, & JM Cotton. 2015. Approaches for reconstructing paleoenvironment in the Cajon Valley and Crowder formations, southern California. *CSU-Fullerton Desert Symposium*, Zzyzx, CA. (Best student talk awarded)

Badgley, C, **TM Smiley**, & K Loughney. 2015. Miocene mammal diversity of the Mojave region in the context of Great Basin mammal history. *CSU-Fullerton Desert Symposium*, Zzyzx, CA. (talk)

Smiley, TM, C Badgley, EG Hyland, JM Cotton, & RE Reynolds. 2014. Coupling environmental change and ecological response: The Miocene of the Mojave Desert, California. *Society of Vertebrate Paleontology*, Berlin, Germany. (talk)

Smiley, TM, & C Badgley. 2014. Spatial variation in stable isotope ecology of small mammals in western North America. *Geologic Society of America*, Vancouver, BC. (Invited talk for session "Dynamic landscapes and the diversification of North American Rodents")

Moroz, M*, **TM Smiley**, & C Badgley. 2014. Fossil mammals from the ancient Mojave: Tracking faunal and environmental change. *National Conference of Undergraduate Research*, Lexington, KY. (poster)

Smiley, TM, C Badgley, & J Finarelli. 2013. Miocene mammal diversity in relation to tectonic and climatic history of the Basin and Range Province. *Society of Vertebrate Paleontology*, Los Angeles, CA. (talk)

Smiley, TM, C Badgley, & AK Behrensmeyer. 2012. Stable oxygen and carbon isotopes record seasonal variation in drinking water and diet of modern large herbivores in Amboseli National Park, Kenya. *Society of Vertebrate Paleontology*, Raleigh, NC. (talk)

Badgley, C, **TM Smiley**, & JA Finarelli. 2012. Great Basin mammalian diversity in the context of landscape evolution. *American Society of Mammalogists*, Reno, NV. (Invited talk)

Smiley, TM, C Sidor, J Steyer, & N Tabor. 2007. First Evidence for a therapsid in the Upper Permian Moradi Formation of Niger. *Society of Vertebrate Paleontology*, Austin, TX. (poster)

TEACHING EXPERIENCE

SEMINARS & MINI-COURSES

- 2018 Stable Isotope Ecology & R mini-course for undergraduate and early graduate students, Oregon State University (organized and co-led with Dr J Cotton)
- 2017 Z507: The Isotopic Niche, Oregon State University (organized & co-led with Dr RC Terry)

GUEST LECTURES

- 2017 Paleobiology, Oregon State University (Instructor: Dr RC Terry)
- 2017 Biogeography, Oregon State University (Instructor: Dr RC Terry)

TEACHING ASSISTANT

- 2010, 2013 Earth 110: Introduction to Global Change, University of Michigan
- 2012 Earth 313: Geobiology, University of Michigan
- 2011, 2012 Earth 116: Introduction to Geologic Sciences Field Course in WY, University of Michigan
- 2007 ESS 101: Introduction to Geologic Sciences Laboratory, University of Washington
- 2007 ESS 213: Evolution of Earth, University of Washington
- 2006 ESS 313: Geobiology, University of Washington

TEACHER TRAINING

- 2018 Center for Teaching & Learning Workshop Series, Oregon State University
- 2017 Science Communication Workshop Series, Oregon Museum of Science & Industry
- 2015 Preparing Future Faculty Teaching Seminar Series, University of Michigan
- 2010, 2015 Rackham Graduate School Teacher Training Workshops (2015 as instructor)

MENTORSHIP & OUTREACH

MENTORSHIP

- 2019-2020 Graduate Research Assistant and Undergraduate Lab Assistants, Stable Isotope Ratio Facility, Indiana University; Student mentored: Danielle Peltier (PhD Candidate), Isabel Krahling, Stephanie Evans, Kathryn Evans
- 2017-2018 Undergraduate Lab and Research in Collections Assistant, Oregon State University; Student mentored: Juniper Grimes
- 2010-2016 UROP (Undergraduate Research Opportunities Program) & Undergraduate Lab and Field Assistants, University of Michigan; Students mentored: Matthew Hillyer, Caleb Fogel, Leah Gillett, Gregory Hanafin, Katarzyna Rymar (UROP), Molly Moroz (UROP), Laura McQuarter (UROP), Anna Heyblom
- 2011, 2013 EDQUE²ST (Enhancing Diversity, Quality, and Understanding of the Ecological and Evolutionary Sciences for Tomorrow) Program, University of Michigan; Students mentored: Gisela Alvarez, Dacotah Wolf Necklace

INTERNATIONAL TRAINING & COLLABORATION

- 2011-2012 Amboseli National Park, Kenya; Collaborated with and trained two young Kenyan scientists in field collection methods and supported continued collection of grass and water samples over the following year. Field Assistants/Collaborators: Sakimba Kimiti, Peter Maina

MUSEUM OUTREACH & VOLUNTEER WORK

- 2018 ERI Fall Research Symposium, Science on Tap Panelist: science communication events
- 2017 Meet a Scientist Day, Oregon Museum of Science and Industry: present hands-on activity for young students and their families on field work, fossil identification, and paleoecology and environmental change through time

2011-2015	University of Michigan Natural History Museum: public Museum of Paleontology tours and annual Identification Days
2012-2016	FEMMES (Females Excelling More in Math, Engineering and Science) and the National Ocean Science Bowl, University of Michigan

PROFESSIONAL MEMBERSHIPS & SERVICE

MEMBERSHIPS

2017-current	American Society of Naturalists
2016-current	Paleontological Society
2016-current	International Biogeography Society
2015-current	American Society for Mammalogy, Ecological Society of America
2014-current	Geological Society of America
2007-current	Society of Vertebrate Paleontology

SERVICE

2019	Associate Editor: <i>Frontiers of Biogeography</i>
2019	ERI Fellows Evaluation committee
2015-2020	Journal Referee: <i>Science; Paleobiology; Ecology Letters; Journal of Biogeography; Journal of Zoology; Biological Conservation; PlosOne; Holocene; Biogeosciences; Palaeogeography, Palaeoclimatology, Palaeoecology</i>
2015	Session moderator: Society of Vertebrate Paleontology (SVP) Annual Meeting
2015	Graduate student organizer: Women of SVP Workshop
2005-2007	President & Treasurer, Earth and Environmental Sciences Club, University of Washington
2005-2007	Member & Undergraduate Advisor, Biology Tri-Beta Club, University of Washington

SELECT FIELD EXPERIENCE

2012-2015	Mojave Desert & Cajon Pass, CA (Led or co-led annual paleontological field expeditions, trained undergraduate field assistants): <i>Middle Miocene Barstow, Cajon Valley and Crowder formations – stratigraphy, geologic sampling for paleoenvironmental proxies, fossil excavation and screen washing</i>
2015	Meade Basin, KS (Field assistant): <i>Modern small-mammal trapping, Late Miocene sedimentary geology and paleontology</i>
2011	Amboseli National Park, Kenya (Co-led expedition, trained Kenyan field assistants): <i>Modern water and grass sampling, survey of modern bone accumulations</i>
2006	Northern Niger (Field assistant for University of Washington Burke Museum expedition, led by Dr. Christian Sidor) <i>Upper Permian vertebrate fossil, paleobotanical, and geologic records</i>
2006	John Day Fossil Beds National Monument, OR (Field Intern) <i>Fossil surveying, collection, preparation and museum curation</i>

INTERNATIONAL VOLUNTEER SERVICE

2009-2010	US Peace Corps Volunteer, Environmental Education and Agricultural Sustainability, Endagaw, Tanzania
2008-2009	US Peace Corps Volunteer, Environmental Education & Agricultural Sustainability, Katsepy, Madagascar

ADVISORS

POSTDOCTORAL

Dr. Rebecca Terry, Integrative Biology, Oregon State University

PHD COMMITTEE

Dr. Catherine Badgley (Advisor/Chair), Ecology & Evolutionary Biology, University of Michigan

Dr. Daniel Fisher, Museum of Paleontology, University of Michigan

Dr. Nathan Niemi, Earth and Environmental Sciences, University of Michigan

Dr. Daniel Rabosky, Ecology & Evolutionary Biology, University of Michigan

Dr. Nathan Sheldon, Earth and Environmental Sciences, University of Michigan

UNDERGRADUATE ADVISORS/MENTORS

Dr. Christian Sidor, Burke Museum – Vertebrate Paleontology, University of Washington

Dr. Bruce Nelson, Earth & Space Sciences, University of Washington

Dr. Elizabeth Nesbitt, Burke Museum – Invertebrate Paleontology, University of Washington