

Seema Nayan Sheth

ssheth3@ncsu.edu

Phone: (919) 515-4168

<http://www.seemasheth.weebly.com>

Department of Plant and Microbial Biology

North Carolina State University

Raleigh, NC 27695

PROFESSIONAL APPOINTMENTS

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|---|----------------|
| Assistant Professor Department of Plant and Microbial Biology North Carolina State University | 2018 - present |
| National Science Foundation Postdoctoral Fellow Department of Integrative Biology University of California, Berkeley Supporting scientists: Dr. David Ackerly and Dr. Bruce Baldwin | 2016 - 2017 |
| Postdoctoral Research Associate Department of Ecology, Evolution, and Behavior University of Minnesota Advisor: Dr. Ruth Shaw | 2014 - 2015 |
| Research Scientist: Conservation, Ecology, and Evolution Center for Conservation and Sustainable Development Missouri Botanical Garden | 2006 - 2008 |

EDUCATION

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|---|-------------|
| Ph.D., Ecology Colorado State University Advisor: Dr. Amy Angert | 2008 - 2014 |
| M.S., Biology (Ecology, Evolution, and Systematics) University of Missouri - St. Louis Advisor: Dr. Bette Loiselle | 2003 - 2006 |
| B.A., Environmental Sciences and Spanish (double major) Washington University in St. Louis | 1998 - 2002 |

RESEARCH INTERESTS

evolutionary and population ecology; biogeography; plant community responses to climate change

PUBLICATIONS

Undergraduate student^u; Graduate student^g; Postdoctoral associate^p

23. Barley, J. M., B. S. Cheng, M. Sasaki, S. Gignoux-Wolfsohn, C. G. Hays, A. B. Putnam, **S. N. Sheth**, A. R. Villeneuve, and M. W. Kelly. 2021. Limited plasticity in thermally tolerant ectotherm populations: evidence for a trade-off. *Proceedings of the Royal Society B* 288: 20210765.
22. Vtipil, E. E.^{u,g} and **S. N. Sheth**. 2020. A resurrection study reveals limited evolution of phenology in response to recent climate change across the geographic range of the scarlet monkeyflower. *Ecology and Evolution* 10: 14165-14177.
21. Wooliver, R.^p, S. B. Tittes, and **S. N. Sheth**. 2020. A resurrection study reveals limited evolution of thermal performance in response to recent climate change across the geographic range of the scarlet monkeyflower. *Evolution* 74: 1699-1710.

20. **Sheth, S.N.**, N. Morueta-Holme, and A. L. Angert. 2020. Determinants of geographic range size in plants. *New Phytologist* 226: 650-665.
19. Briscoe Runquist, R. D., A. J. Gorton, J. B. Yoder, N. J. Deacon, J. J. Grossman, S. A. Kothari, M. P. Lyons, **S. N. Sheth**, P. Tiffin, and D. A. Moeller. 2020. Context dependence of local adaptation to abiotic and biotic environments: a quantitative and qualitative synthesis. *American Naturalist* 195: 412-431.
18. Smithers, B. V., M. F. Oldfather, M. J. Koontz, J. Bishop, C. Bishop, J. Nachlinger, and **S. N. Sheth**. 2020. Community turnover by composition and climate affinity across scales in an alpine system. *American Journal of Botany* 107: 239-249.
17. Oldfather, M. F., M. M. Kling, **S. N. Sheth**, N. C. Emery, and D. D. Ackerly. 2020. Range edges in heterogeneous landscapes: integrating geographic scale and climate complexity into range dynamics. *Global Change Biology* 26: 1055-1067.
16. Lowry D. B., J. M. Sobel, A. L. Angert, T-L. Ashman, R. L. Baker, B. K. Blackman, Y. Brandvain, K. J. R. P. Byers, A. M. Cooley, J. M. Coughlan, M. R. Dudash, C. B. Fenster, K. G. Ferris, L. Fishman, J. Friedman, D. L. Grossenbacher, L. M. Holeski, C. T. Ivey, K. M. Kay, V. A. Koelling, N. J. Kooyers, C. J. Murren, C. D. Muir, T. C. Nelson, M. L. Peterson, J. R. Puzey, M. C. Rotter, J. R. Seeman, J. P. Sexton, **S. N. Sheth**, M. A. Streisfeld, A. L. Sweigart, A. D. Twyford, M. Vallejo-Marin, J. H. Willis, C. A. Wu, and Y. W. Yuan. 2019. The case for the continued use of the genus name *Mimulus* for all monkeyflowers. *Taxon* 68: 617-623.
15. Kulbaba, M. W., **S. N. Sheth**, R. E. Pain, V. M. Eckhart, and R. G. Shaw. 2019. Additive genetic variance for lifetime fitness and the capacity for adaptation in the wild. *Evolution* 73: 1746-1758.
14. **Sheth, S. N.**, M. W. Kulbaba, R. E. Pain, and R. G. Shaw. 2018. Expression of additive genetic variance for fitness in a population of partridge pea in two field sites. *Evolution* 72: 2537-2545.
13. **Sheth, S. N.** and A. L. Angert. 2018. Demographic compensation does not rescue populations at a trailing range edge. *Proceedings of the National Academy of Sciences (USA)* 115: 2413-2418.
12. Pain, R. E., R. G. Shaw, and **S. N. Sheth**. 2018. Costs associated with N-fixing rhizobia early in the life of partridge pea *Chamaecrista fasciculata*. *American Journal of Botany* 105: 796-802.
11. Morueta-Holme, N., M. F. Oldfather, R. L. Olliff-Yang, A. P. Weitz, C. R. Levine, M. M. Kling, E. C. Riordan, C. Merow, **S. N. Sheth**, A. H. Thornhill, and D. D. Ackerly. 2018. The language of climate change: best practices in research and publication. *Nature Climate Change* 8: 92-94.
10. Angert, A. L., M. Bayly, **S. N. Sheth**, and J. R. Paul. 2018. Testing range-limit hypotheses using range-wide habitat suitability and occupancy for the scarlet monkeyflower (*Erythranthe cardinalis*). *American Naturalist* 191: E76-E89.
9. **Sheth, S. N.** and A. L. Angert. 2016. Artificial selection reveals high genetic variation in phenology at the trailing edge of a species range. *American Naturalist* 187: 182-193. (American Naturalist 2016 Student Paper Award)
8. **Sheth, S. N.**, I. Jiménez, and A. L. Angert. 2014. Identifying the paths leading to variation in geographical range size in western North American monkeyflowers. *Journal of Biogeography* 41: 2344-2356.

7. **Sheth, S. N.** and A. L. Angert. 2014. The evolution of environmental tolerance and range size: a comparison of geographically restricted and widespread *Mimulus*. *Evolution* 68: 2917-2931.
6. **Sheth, S. N.**, L. G. Lohmann, T. Distler, and I. Jiménez. 2012. Understanding bias in geographic range size estimates. *Global Ecology and Biogeography* 21: 732-742.
5. Paul, J. R., **S. N. Sheth**, and A. L. Angert. 2011. Quantifying the impact of gene flow on phenotype-environment mismatch: a demonstration with the scarlet monkeyflower *Mimulus cardinalis*. *American Naturalist* 178: S62-S79.
4. Angert, A. L., **S. N. Sheth**, and J. R. Paul. 2011. Incorporating population-level variation in thermal performance into predictions of geographic range shifts. *Integrative And Comparative Biology* 51: 733-750.
3. **Sheth, S. N.**, B. A. Loiselle, and J. G. Blake. 2009. Phylogenetic constraints on fine-scale patterns of habitat use by eight primate species in eastern Ecuador. *Journal of Tropical Ecology* 25: 571-582.
2. **Sheth, S. N.**, L. G. Lohmann, T. Consiglio, and I. Jiménez. 2008. Effects of detectability on estimates of geographic range size in Bignoniaceae. *Conservation Biology* 22: 200-211.
1. Amend, J. P., D. A. R. Meyer-Dombard, **S. N. Sheth**, N. Zolotova, and A. C. Amend. 2003. *Palaeococcus helgesonii* sp. nov., a facultatively anaerobic, hyperthermophilic archaeon from a geothermal well on Vulcano Island, Italy. *Archives of Microbiology* 179: 394-401.

Manuscripts in review/revision (available upon request)

Coughlin, E. M., R. Wooliver^P, and **S. N. Sheth**. General-purpose genotypes with divergent niche optima shape population-level niche breadth in western North American monkeyflowers. In review at *Evolution*.

Lee-Yaw, J. A., McCune J. L., Pironon, S. and **S. N. Sheth**. On the predictive value of species distribution models in population biology. In revision for *Ecography*.

Preston, J. C, R. Wooliver^P, H. Driscoll, E. Coughlin, and **S. N. Sheth**. Spatial variation in high temperature-regulated gene expression predicts evolution of plasticity with climate change in the scarlet monkeyflower. In review at *Molecular Ecology*.

Querns, A.^g, R. Wooliver^P, M. Vallejo-Marín, and **S. N. Sheth**. The evolution of thermal performance in native and invasive populations of *Mimulus guttatus*. In review at *Evolution Letters*. Pre-print: <https://doi.org/10.1101/2020.09.10.291252>.

Wooliver, R.^P, E. E. Vtipilthorpe^g, A. M. Wiegmann^u, and **S. N. Sheth**. Guidelines for ecological and evolutionary study of plant thermal performance curves in a warming world. In review at *New Phytologist*.

GRANTS, FELLOWSHIPS, AND AWARDS

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| NCSU Faculty Research and Professional Development Fund, \$5,000 | 2019 - 2020 |
| <i>Rapid evolution of thermal tolerance across a species' geographic range</i> | |
| (PI) | |

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| American Naturalist 2016 Student Paper Award | 2017 |
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| NSF Postdoctoral Research Fellowship in Biology, \$138,000 <i>Relationships among climatic tolerance, trait evolution, and diversification in the California flora</i> | 2016 - 2017 |
| Postdoctoral Association Career Development Award, Univ. of Minnesota, \$400 | 2015 |
| Finalist, University of California President's Postdoctoral Fellowship | 2014 |
| NSF DEB Evolutionary Ecology, \$14,984 <i>Dissertation Research: Role of evolutionary potential in limiting species' distributions</i> (co-PI) | 2012 - 2014 |
| Outreach Grant, Society for the Study of Evolution, \$800 | 2012 |
| Global Sustainability Leadership Fellow, Colorado State University | 2012 |
| Rosemary Grant Award, Society for the Study of Evolution, \$2,500 | 2010 |
| Graduate Student Research Award, Botanical Society of America, \$500 | 2010 |
| Finalist, Environmental Protection Agency STAR Graduate Fellowship | 2009 |
| Steinkamp Fund, Colorado Native Plant Society, \$1,000 | 2009 |
| Women in Natural Sciences Travel Grant, Colorado State University, \$300 | 2009 |
| Awards from Department of Biology, Colorado State University, \$7,425 | 2009 - 2014 |
| Grad. Degree Program in Ecology Fellowship, Colorado State University, \$1,000 | 2008 |
| NSF GK-12 Fellowship, Colorado State University, \$4,000 | 2008 |
| NSF GK-12 Fellowship, Univ. of Missouri-St. Louis, \$30,000 | 2005 - 2006 |
| Awards from Department of Biology, Univ. of Missouri-St. Louis, \$3,500 | 2004 - 2005 |
| Primate Action Fund, Conservation International, \$3,000 | 2004 |

PRESENTATIONS

Undergraduate student^u; Graduate student^g; Postdoctoral associate^p

Invited symposia

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| 46th Annual Southern California Botanists Symposium (virtual) Living on the edge - Plants in extreme environments "The role of demographic and evolutionary processes in buffering populations from climate change" | 2020 |
| International Biogeography Society Humboldt-250 Meeting, Quito, Ecuador Symposium: Architects of variation: How climate and physiology shape patterns of biodiversity "Can plant thermal tolerance evolve under climate change? A comparison of central and edge populations" (<u>R. Wooliver^p</u> , S. Tittes, and S.N. Sheth ; presented by R. Wooliver) | 2019 |
| Green Life Sciences, University of Michigan, Ann Arbor, MI Symposium: Plant-environment interactions across scales "Do demographic compensation and adaptation buffer species from changing climate?" | 2018 |
| Society for the Study of Evolution, Portland, OR American Society of Naturalists Symposium: Across the Nth dimension: Quantitative and conceptual advances in the study of niche breadth "Does niche breadth predict vulnerability to changing environments? From population-level traits and demography to diversification in deep time" | 2017 |

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| SACNAS, Long Beach, CA | 2016 |
| Scientific Symposium: (Day and) Night at the Museum: Exploring Research in Ecology and Evolution Behind the Scenes of Natural History Museums | |
| “Harnessing the power of herbarium specimen data for ecological and evolutionary studies” | |
| Jornadas Argentinas de Botanica, Corrientes, Argentina | 2007 |
| Symposium: Conservation and Threat Assessments of Plants | |
| “Riesgo de extinción en Bignoniaceae (Bignoniaceae): una perspectiva filogenética” (Sheth, S.N. , L.G. Lohmann, T. Consiglio, and I. Jiménez) | |
| Botanical Society of America and Plant Biology Joint Congress, Chicago, IL | 2007 |
| Colloquium: Integration of spatial and ecological data in evolutionary studies | |
| “Extinction risk in Bignoniaceae (Bignoniaceae): a phylogenetic perspective” (Sheth, S.N. , L.G. Lohmann, T. Consiglio, and I. Jiménez) | |

Invited seminars

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| Department of Ecology and Evolutionary Biology, University of California, Irvine | 2021 |
| Ecology, Evolution, and Behavior Program, Michigan State University | 2021 |
| Department of Integrative Biology, University of California, Berkeley | 2020 |
| *** Graduate Student Invited Lecture *** | |
| Department of Ecology and Evolutionary Biology, University of Arizona | 2020 |
| Department of Ecology and Evolutionary Biology, Tulane University | 2019 |
| Program in Ecology, Duke University | 2019 |
| Kellogg Biological Station, Michigan State University | 2019 |
| Genetics and Genomics Seminar Series, North Carolina State University | 2019 |
| Bio-Pop Seminar Series, Department of Biology, University of North Carolina | 2018 |
| Department of Plant Biology, University of Vermont | 2018 |
| EEBio Seminar Series, Department of Biology, University of Virginia | 2018 |
| Department of Forestry and Environmental Resources, North Carolina State University | 2018 |
| Department of Biological Sciences, California Polytechnic State University | 2017 |
| Department of Ecology and Evolutionary Biology, University of California, Los Angeles | 2017 |
| Environmental Systems Graduate Group, University of California, Merced | 2017 |
| School of Integrative Plant Science, Plant Biology Section, Cornell University | 2017 |
| Center for Population Biology, University of California, Davis | 2017 |
| Department of Biology, University of Utah | 2017 |
| Natural History Museum of Utah | 2017 |
| Department of Plant and Microbial Biology, North Carolina State University | 2017 |
| Department of Biology, Williams College | 2016 |
| Department of Biology, University of San Francisco | 2016 |
| Department of Biology, Grinnell College | 2015 |
| Department of Plant Biology, University of Minnesota | 2015 |
| Department of Biology, Washington University in St. Louis | 2007 |
| Department of Biology, St. Louis University | 2007 |

Contributed conference presentations

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| Preston, J. C, <u>R. Wooliver</u> ^P , H. Driscoll, E. Coughlin, and S. N. Sheth . | 2021 |
| “Spatial variation in high temperature-regulated gene expression predicts evolution of plasticity with climate change in the scarlet monkeyflower.” | |
| Botany (virtual; presented by J. C. Preston) | |

- Olliff Yang, R. L., **S. N. Sheth**, and D. Ackerly. "Population differentiation in flowering time in *Lasthenia gracilis*, a widespread annual forb." Botany (virtual; presented by R. L. Olliff Yang) 2021
- Smithers, B. V., M. F. Oldfather, M. J. Koontz, J. Bishop, C. Bishop, J. Nachlinger, and **S. N. Sheth**. "Community turnover by composition and climate affinity across scales in an alpine system." Ecological Society of America (virtual; presented by B. Smithers) 2020
- Wooliver, R.^P, E.E. Vtipil^g, and **S.N. Sheth**. "A call for unified study of plant thermal performance in a warming world." Botany (virtual; presented by R. Wooliver) 2020
- Querns, A.^g, R. Wooliver^P, M. Vallejo-Marín, and **S.N. Sheth**. "The evolution of thermal performance in native and invasive populations of *Mimulus guttatus*." Botany (virtual; poster presented by A. Querns) 2020
*** Winner of Best Graduate Student Poster in Ecology ***
- Wooliver, R.^P, S. Tittes, and **S.N. Sheth**. "Can plant thermal tolerance evolve under climate change? A comparison of central and edge populations." Southeast Population Ecology and Evolutionary Genetics, Clemson, SC (presented by R. Wooliver) 2019
- Vtipil, E.E.^{u,g} and **S.N. Sheth**. "The evolution of flowering time in response to climate change in *Erythranthe cardinalis*." Southeast Population Ecology and Evolutionary Genetics, Clemson, SC (poster presented by E. Vtipil). 2019
*** Winner of Second Best Graduate Student Poster ***
- Kulbaba, M., **S.N. Sheth**, R.E. Pain, V.M. Eckhart, and R.G. Shaw. "Adaptive potential and realized changes in fitness in natural populations." Society for the Study of Evolution, Montpellier, France (poster presented by M. Kulbaba) 2018
- Sheth, S.N.** and A.L. Angert. "Demographic compensation does not rescue *Erythranthe cardinalis* populations at the southern edge of the species range." Ecological Society of America, Portland, OR 2017
- Kulbaba, M., R.E. Pain, V.M. Eckhart, **S.N. Sheth**, and R.G. Shaw. "The immediate capacity for adaptation and its realization in natural plant populations." International Botanical Congress, Shenzhen, China 2017
- Sheth, S.N.**, M. Kulbaba, R.E. Pain, and R.G. Shaw. "Expression of additive genetic variance for fitness in a population of partridge pea grown in two field sites." Society for the Study of Evolution, Portland, OR (presented by R.G. Shaw) 2017
- Sheth, S.N.**, W.A. Freyman, B.G. Baldwin, and D.D. Ackerly. "Relationships among rates of climatic niche evolution and diversification." Society for the Study of Evolution, Austin, TX (poster) 2016
- Sheth, S.N.** and A.L. Angert. "Artificial selection reveals high genetic variation in phenology at the trailing edge of a species range." Ecological Society of America, Baltimore, MD 2015
- Sheth, S.N.** and A.L. Angert. "Does a jack-of-all-temperatures have a large geographic range?" Society for the Study of Evolution, Snowbird, UT 2013
- Sheth, S.N.**, I. Jiménez, and A.L. Angert. "Effects of niche properties on variation in geographic range size among species of western North American monkeyflowers." Ecological Society of America, Portland, OR 2012

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| Sheth, S.N. , L.G. Lohmann, T. Distler, and I. Jiménez. "The Wallacean shortfall: bias in estimates of geographic range size." Botanical Society of America, St. Louis, MO (presented by I. Jiménez) | 2011 |
| Sheth, S.N. and A.L. Angert. "Ecological niche attributes and geographic range size in western North American monkeyflowers." Society for the Study of Evolution, Portland, OR | 2010 |
| Sheth, S.N. , L.G. Lohmann, I. Jiménez, and T. Consiglio. "Riesgo de extinción en Bignonieae (Bignoniaceae) estimado con datos de herbario." Congreso Latinoamericano de Botánica. Santo Domingo, Dominican Republic (presented by L. G. Lohmann) | 2006 |

TEACHING

North Carolina State University

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|---|----------------|
| Plant Ecology, PB450/550-001, solo instructor | 2019 - present |
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Colorado State University

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| Principles of Plant Biology Laboratory, teaching assistant | 2008 - 2014 |
| Plant Ecology, guest lecturer | 2012 - 2013 |
| Plant Ecology, teaching assistant | 2011 - 2012 |
| Biology of Organisms, guest lecturer | 2009 |
| Cache La Poudre Junior High School, NSF GK-12 fellow, LaPorte, CO | 2008 - 2009 |

Missouri Botanical Garden

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| Neotropical Plant Families, guest lecturer for University of Michigan course | 2008 |
| Conservation Biology, guest lecturer for University of Missouri - St. Louis course | 2008 |

University of Missouri - St. Louis

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| McCluer High School, NSF GK-12 fellow, Florissant, MO | 2005 - 2006 |
| Organisms and the Environment Laboratory, guest lecturer | 2005 |

AmeriCorps Partnership for Youth

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| Woodward Elementary School, tutor and teaching assistant, St. Louis, MO | 2002 - 2003 |
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MENTORING

North Carolina State University

Postdoctoral associates

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| Dr. Rachel Wooliver | 2018 - 2020 |
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Graduate students

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| Emma Vtipilthorpe (Ph.D.) | 2020 - present |
| Aleah Querns (M.S.) | 2018 - 2020 |
| Emma Vtipil (M.R.) | 2019 - 2020 |

Undergraduate researchers

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| Devin Adas | 2021 |
| Brooke Caldwell | 2019 - 2020 |
| Natalie Gold | 2019 |
| Mariah Kidd | 2019 - 2020 |
| Daisy Ryan | 2020 - 2021 |
| Emily Powell | 2021 - present |
| Jessie Torres | 2018 - 2019 |
| Emma Vtipil (Honor's thesis student; recipient of NCSU Chilton Research Award) | 2018 - 2019 |

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| Mia Wiegmann | 2018 - 2021 |
| Emma Wilson | 2021 - present |
| Collin Yurish | 2018 - 2019 |

Graduate student committees

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| Samuel Flake, NCSU | 2018 - 2021 |
| Kira Lindelof, NCSU | 2020 - present |
| Ryan O'Connell, Duke University | 2020 - present |
| Simon Pinilla-Gallego, NCSU | 2018 - 2021 |
| Anita Simha, Duke University | 2020 - present |
| Greg Wilson, NCSU | 2018 - 2019 |

University of California, Berkeley

Mentored 7th graders at King Middle School as part of Be a Scientist outreach program 2017

University of Minnesota

Sam Weaver (NSF REU student from St. Olaf College) 2015

Colorado State University

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| Amber Weimer (Honor's thesis undergraduate student) | 2013 - 2014 |
| Trained, mentored, and supervised 17 undergraduates & recent college graduates | 2009 - 2014 |
| Biological Summer Undergraduate Research Experience program committee member | 2012 |

SERVICE

University service

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| Plant Biology Graduate admissions committee, NCSU | 2018 - present |
| College of Agricultural and Life Sciences greenhouse committee, NCSU | 2019 - present |
| Ecology faculty search committee, Dept. of Plant and Microbial Biology, NCSU | 2019 - 2020 |
| Biology faculty search committee, Colorado State University | 2012 - 2013 |

Professional service

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|---|----------------|
| Workshop and Regional Society committee member, American Society of Naturalists | 2021 - present |
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| Hamilton student award committee member, Society for the Study of Evolution | 2020; cancelled due to COVID-19 |
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| Manuscript reviewer: <i>American Journal of Botany</i> , <i>American Naturalist</i> , <i>Annals of Botany</i> , <i>AoB PLANTS</i> , <i>Biology Letters</i> , <i>BMC Evolutionary Biology</i> , <i>Current Biology</i> , <i>Ecography</i> , <i>Ecological Applications</i> , <i>Ecology</i> , <i>Ecology Letters</i> , <i>Evolution</i> , <i>Evolutionary Ecology</i> , <i>Functional Ecology</i> , <i>Journal of Animal Ecology</i> , <i>Journal of Ecology</i> , <i>Molecular Ecology</i> , <i>New Phytologist</i> , <i>Philosophical Transactions of the Royal Society B</i> , <i>PNAS</i> , <i>Proceedings of the Royal Society B</i> , <i>Science Advances</i> , <i>Trends in Ecology and Evolution</i> | 2009 - present |
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| Proposal reviewer: NSF Division of Environmental Biology | 2021 |
| Book proposal reviewer: Oxford University Press | 2018 |
| Proposal reviewer: NSF Division of Environmental Biology, Population and Community Ecology | 2014 |

Other service

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| Volunteer: Global Observation Research Initiative in Alpine Environments (GLORIA), White Mountains Wilderness, California | 2017 - present |
| Exhibitor, Darwin Day, North Carolina Museum of Natural Sciences | 2019 |
| Judge, Southeast Population Ecology and Evolutionary Genetics | 2019 |
| Advisory board member: Science Ambassador Scholarship (for undergraduate women in science, technology, engineering, or math), Cards Against Humanity | 2017 - 2018 |
| Collaborated with National Park Service to recruit Navajo Nation students to assist with fieldwork in Canyon de Chelly National Monument, AZ | 2009 |
| Volunteer, Putnam Elementary Science Carnival, Fort Collins, CO | 2009 |
| Volunteer, Unidad Técnica (environmental NGO), Managua, Nicaragua | 2001 |

WORKING GROUPS AND WORKSHOPS

| | |
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| Agricultural Leadership Learning Institute for Faculty, North Carolina State University, Raleigh, NC | 2019 |
| Evolution in Changing Seas Synthesis Workshop, Shoals Marine Laboratory, Appledore, ME | 2019 |
| Software Carpentry Workshop, Berkeley Institute of Data Sciences, Berkeley, CA | 2016 |
| Early Career Centennial Mentoring Program, Ecological Society of America, Baltimore, MD | 2015 |
| Quantitative Genetics and Mixed Models in Quantitative Genetics, Summer Institute in Statistical Genetics, University of Washington, Seattle, WA | 2013 |
| Intro to Python for ArcGIS Workshop, Colorado State University, Fort Collins, CO | 2013 |
| Science Communication Workshop, Colorado State University, Fort Collins, CO | 2012 |
| Living on the edge: integrating science into the management of range-margin populations, University of Wyoming, Laramie, WY | 2010 |
| Applied Phylogenetics Workshop, Bodega Bay Marine Laboratory, CA | 2010 |
| Working with ArcGIS Spatial Analyst (short course), Environmental Systems Research Institute, St. Charles, MO | 2007 |
| Distance Sampling Workshop, University of Missouri - St. Louis, St. Louis, MO | 2006 |
| Assessing extinction risk in Bignonieae (summer internship), Center for Conservation and Sustainable Development, Missouri Botanical Garden, St. Louis, MO | 2005 |
| Geographic Information Systems (course), University of Missouri - St. Louis | 2004 |
| Tropical Biology: An Ecological Approach (course), Organization for Tropical Studies, Costa Rica | 2004 |
| Historical Biogeography (short course), University of Missouri - St. Louis | 2004 |

PROFESSIONAL AFFILIATIONS AND SOCIETIES

Science Director: GLORIA (Global Observation Research Initiative in Alpine Environments) Great Basin

Faculty Affiliate: Southeast Climate Science Center

American Society of Naturalists

Botanical Society of America

Ecological Society of America

Society for the Study of Evolution

last updated September 28, 2021