

# Seema Nayan Sheth

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Department of Plant and Microbial Biology

North Carolina State University

Raleigh, NC 27695

## PROFESSIONAL APPOINTMENTS

**Associate Professor** 2024 - present

Department of Plant and Microbial Biology

North Carolina State University

**Assistant Professor** 2018 - 2024

Department of Plant and Microbial Biology

North Carolina State University

**National Science Foundation Postdoctoral Fellow** 2016 - 2017

Department of Integrative Biology

University of California, Berkeley

Supporting scientists: Dr. David Ackerly and Dr. Bruce Baldwin

**Postdoctoral Research Associate** 2014 - 2015

Department of Ecology, Evolution, and Behavior

University of Minnesota

Advisor: Dr. Ruth Shaw

**Research Scientist: Conservation, Ecology, and Evolution** 2006 - 2008

Center for Conservation and Sustainable Development

Missouri Botanical Garden

## EDUCATION

**Ph.D., Ecology** 2008 - 2014

Colorado State University

Advisor: Dr. Amy Angert

**M.S., Biology (Ecology, Evolution, and Systematics)** 2003 - 2006

University of Missouri - St. Louis

Advisor: Dr. Bette Loiselle

**B.A., Environmental Sciences and Spanish (double major)** 1998 - 2002

Washington University in St. Louis

## RESEARCH INTERESTS

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

## PUBLICATIONS

Undergraduate student<sup>u</sup>; Graduate student<sup>g</sup>; Postdoctoral associate<sup>p</sup>; Research technician<sup>t</sup>

37. **Sheth, S. N.**, L. J. Albano<sup>p</sup>, C. Blanchard, E. J. Cook, R. Diaz, X. Gomez-Vega, K. Kutella, M. Moazed<sup>t</sup>, M. Patel, J. Prange, N. Ramadoss, A. Regan, A. Riley, M. Rivas Hernandez, J. Rojas, M. Strebler, A. Verma, L. Villano<sup>t</sup>, J. Waits, D. Wang, O. Wilborn-Pilotte, J. Diez, L. Flores-Renteria, J. Sexton, and C. D. Muir. 2025. Evolutionary responses to historic drought across the range of scarlet monkeyflower. *American Naturalist*. <https://doi.org/10.1086/738434>.

36. Buckley, L. B., L. P. P. Braga, M. L. Pinsky, J. Resasco, **S. N. Sheth**, A. J. Tanentzap, and L. Zoller. (2025), Repeating historical studies to understand functional responses to environmental change. *American Naturalist*. <https://doi.org/10.1086/738435>.
35. Kooyers, N. J., J. T. Anderson, A. L. Angert, M. L. Avolio, D. R. Campbell, M. Exposito-Alonso, T. E. Juenger, D. A. Moeller, J. D. Napier, and **S. N. Sheth**. 2025, Responses to climate change insights and limitations from herbaceous plant model species. *New Phytologist*. <https://doi.org/10.1111/nph.70468>.
34. Evans, M. E. K., P. B. Adler, A. L. Angert, S. M. N. Dey, M. P. Girardin, K. A. Heilman, S. Klesse, D. L. Perret, D. F. Sax, **S. N. Sheth**, M. Stemkovski and J. L. Williams. 2025. Reconsidering space-for-time substitution in climate change ecology. *Nature Climate Change* 15: 809-812. <https://doi.org/10.1038/s41558-025-02392-0>.
33. Goff, K. A.<sup>g</sup>, M. F. Oldfather, J. Nachlinger, B. V. Smithers, M. J. Koontz, J. Bishop, C. Bishop, M. T. Burke, and **S. N. Sheth**. 2025. Limited directional change in mountaintop plant communities over 19years in western North America. *Ecosphere* 16: e70197. <https://doi.org/10.1002/ecs2.70197>.
32. Cocciardi, J. M., A. M. Hoffman, D. F. Alvarado-Serrano, J. Anderson, M. Blumstein, E. L. Boehm, L. G. Bolin, I. T. Borokini, G. S. Bradburd, H. A. Branch, L. A. Brudvig, Y. Chen, S. L. Collins, D. L. Des Marais, D. Gamba, N. P. Hanan, M. M. Howard, J. Jaros, T. E. Juenger, N. J. Kooyers, E. J. Kottler, J. A. Lau, M. Menon, D. A. Moeller, T. J. Mozdzer, **S. N. Sheth**, M. Smith, K. Toll, M. C. Ungerer, M. L. Vahsen, S. M. Wadgymar, A. Waananen, K. D. Whitney, and M. L. Avolio. 2024. The value of long-term ecological research for evolutionary insights. *Nature Ecology & Evolution* 8: 1584 - 1592. <https://doi.org/10.1038/s41559-024-02464-y>.
31. Wadgymar, S. M., **S. N. Sheth**, E. B. Josephs, M. L. DeMarche, , and J. T. Anderson. 2024. Defining fitness in evolutionary ecology. *International Journal of Plant Sciences* 185: 218-227. <https://doi.org/10.1086/729360>.
30. Sasaki, M. J. M. Barley, S. Gignoux-Wolfsohn, C. G. Hays, M. W. Kelly, A. B. Putnam, **S. N. Sheth**, A. R. Villeneuve, and B. S. Cheng. 2022. Greater evolutionary divergence of thermal limits within marine than terrestrial species. *Nature Climate Change*. <https://doi.org/10.1038/s41558-022-01534-y>.
29. Coughlin<sup>t</sup>, A. O., R. Wooliver<sup>P</sup>, and **S. N. Sheth**. 2022. Populations of western North American monkeyflowers accrue niche breadth primarily via genotypic divergence in environmental optima. *Ecology and Evolution* 12: e9434. <https://doi.org/10.1002/ece3.9434>.
28. Wadgymar, S. M., M. L. DeMarche, E. B. Josephs, **S. N. Sheth**, and J. T. Anderson. 2022. Local Adaptation: Causal agents of selection and adaptive trait divergence. *Annual Review in Ecology, Evolution, and Systematics* 53: 87-111. <https://doi.org/10.1146/annurev-ecolsys-012722-035231>.
27. Wooliver, R.<sup>P</sup>, E. E. Vtipilthorpe<sup>g</sup>, A. M. Wiegmann<sup>u</sup>, and **S. N. Sheth**. 2022. A viewpoint on ecological and evolutionary study of plant thermal performance curves in a warming world. *AoB Plants* 14: plac016, <https://doi.org/10.1093/aobpla/plac016>.
26. Querns, A.<sup>g</sup>, R. Wooliver<sup>P</sup>, M. Vallejo-Marín, and **S. N. Sheth**. 2022. The evolution of thermal performance in native and invasive populations of *Mimulus guttatus*. *Evolution Letters* 6: 136-148, <https://doi.org/10.1002/evl3.275>.

25. Lee-Yaw, J. A., McCune J. L., Pironon, S. and **S. N. Sheth**. 2022. On the predictive value of species distribution models in population biology. *Ecography* 2022: e05877, <https://doi.org/10.1111/ecog.05877>. (**Runner-up for Ecography E4 Award**)
24. Preston, J. C, R. Wooliver<sup>P</sup>, H. Driscoll, A. Coughlin<sup>t</sup>, and **S. N. Sheth**. 2022. Spatial variation in high temperature-regulated gene expression predicts evolution of plasticity with climate change in the scarlet monkeyflower. *Molecular Ecology* 31: 1254-1268, <https://doi.org/10.1111/mec.16300>.
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, <https://doi.org/10.1098/rspb.2021.0765>.
22. Vtipil, E. E.<sup>u,g</sup> 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, <https://doi.org/10.1002/ece3.7011>.
21. Wooliver, R.<sup>P</sup>, 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, <https://doi.org/10.1111/evo.14041>.
20. **Sheth, S.N.**, N. Morueta-Holme, and A. L. Angert. 2020. Determinants of geographic range size in plants. *New Phytologist* 226: 650-665, <https://doi.org/10.1111/nph.16406>.
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, <https://doi.org/10.1086/707322>.
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, <https://doi.org/10.1002/ajb2.1376>.
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, <https://doi.org/10.1111/gcb.14897>.
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, <https://doi.org/10.1002/tax.12122>.
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, <https://doi.org/10.1111/evo.13830>.

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, <https://doi.org/10.1111/evo.13614>.
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, <https://doi.org/10.1073/pnas.1715899115>.
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, <https://doi.org/10.1002/ajb2.1077>.
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, <https://doi.org/10.1038/s41558-017-0060-2>.
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, <https://doi.org/10.1086/695984>.
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, <https://doi.org/10.1086/684440>. (**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, <https://doi.org/10.1111/jbi.12378>.
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, <https://doi.org/10.1111/evo.12494>.
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, <https://doi.org/10.1111/j.1466-8238.2011.00716.x>.
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, <https://doi.org/10.1086/661781>.
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, <https://doi.org/10.1093/icb/icr048>.
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, <https://doi.org/10.1017/S0266467409990216>.
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, <https://doi.org/10.1111/j.1523-1739.2007.00858.x>.

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, <https://doi.org/10.1007/s00203-003-0542-7>.

### *Manuscripts in review/revision*

Pennington<sup>P</sup>, L., **S. N. Sheth**, S. J. Franks, J. T. Anderson, and E. Hamann. 2025. Two decades of resurrection studies: What have we learned about contemporary evolution of plant species? bioRxiv. In review at *American Journal of Botany*. Pre-print: <https://doi.org/10.1101/2025.07.27.667050>.

Williams, J. L., A. L. Angert, A. Compagnoni, A. Campbell, M. L. DeMarche , M. E. K. Evans , J. C. Fowler, E. J. González, A. M. Iler, J. A. Loesberg, A. M. Louthan, A. B. Martin, J. K. Moutouama, S. W. Nordstrom, W. K. Petry, B. en, **S. N. Sheth**, and TEX Miller. 2025. Linking climate and demography to predict population dynamics and persistence under global change. In review at *Ecology Letters*. Pre-print: <https://doi.org/10.22541/au.175270366.69122163/v1>.

Albano<sup>P</sup>, L. J., R. A. Bingham, S. Correa<sup>u</sup>, C. G. Laufenberg<sup>u</sup>, C. Payst<sup>u</sup>, C. D. Muir, **S. N. Sheth**. 2025. Range-wide responses to an extreme heat event in *Mimulus cardinalis*. In revision for *American Journal of Botany*. Pre-print: <https://doi.org/10.1101/2025.05.01.651703>

## GRANTS, FELLOWSHIPS, AND AWARDS

### Major grants and fellowships

<b>Goodnight Early Career Innovators Award, \$66,000 (PI)</b>	2023-2026
<b>National Science Foundation, DEB, Total: \$600,000 (\$593,400 to NCSU)</b>	2024-2029
<i>LTREB: Population persistence in a variable world: spatiotemporal variation in climate and demography across the range of scarlet monkeyflower (lead PI). co-PI: Amy Angert (U. of British Columbia).</i>	
<b>National Science Foundation, DEB, Total: \$29,839 (\$11,646 to NCSU)</b>	2023 - 2025
<i>ROA supplement to Collaborative Research: BEE: Integrating evolutionary genetics and population ecology to detect contemporary adaptation to climate change across a species range (lead PI, with subaward to Robin Bingham at Western Colorado University).</i>	
<b>National Science Foundation, IOS, Total: \$2,236,397 (\$399,383 to NCSU)</b>	2023-2026
<i>Collaborative Research: ORCC: RUI: Integrating evolutionary and migratory potential of <i>Chamaecrista fasciculata</i> into forecasts of range-wide population dynamics under climate change (co-PI). lead PI: Jill Anderson (U. of Georgia); co-PIs: Megan Demarche (U. of Georgia), Susana Wadgymar (Davidson College), Emily Josephs (Michigan State U.), and Jenny Cruse-Sanders (State Botanical Garden of Georgia).</i>	
<b>National Science Foundation, DEB, Total: \$1,452,695 (\$509,734 to NCSU)</b>	2022-2025
<i>Collaborative Research: BEE: Integrating evolutionary genetics and population ecology to detect contemporary adaptation to climate change across a species range (lead PI). co-PIs: Chris Muir (U. of Hawai'i at Mānoa), Lluvia Flores-Rentería (San Diego State U.), Jason Sexton (U. of California, Merced), and Jeff Diez (U. of Oregon).</i>	

<b>NSF Postdoctoral Research Fellowship in Biology, \$138,000</b>	2016 - 2017
<i>Relationships among climatic tolerance, trait evolution, and diversification in the California flora</i>	
<b>NSF DEB Evolutionary Ecology, \$14,984</b>	2012 - 2014
<i>Dissertation Research: Role of evolutionary potential in limiting species' distributions</i> (co-PI)	
<b>NSF GK-12 Fellowship, Univ. of Missouri-St. Louis, \$30,000</b>	2005 - 2006
<b>Awards</b>	
Runner-up, Ecography Award for Excellence in Ecology and Evolution (E4)	2022
Awarded to early career researchers (Lee-Yaw et al.) for an outstanding Review paper in journal <i>Ecography</i>	
American Naturalist 2016 Student Paper Award	2017
<b>Small grants, fellowships, and honors</b>	
GLORIA Great Basin, \$10,189	2024 - 2027
<i>Long-term effects of climate change on 29 alpine peaks in California and Nevada</i> (PI)	
NCSU Kenan Institute for Technology, Engineering and Science Climate Leadership Program (PI), \$5,000	2023
NCSU Faculty Research and Professional Development Fund, \$5,250	2022 - 2023
<i>A functional trait perspective on alpine plant community shifts in a rapidly changing climate</i> (PI)	
NCSU Faculty Research and Professional Development Fund, \$5,000	2019 - 2020
<i>Rapid evolution of thermal tolerance across a species' geographic range</i> (PI)	
Postdoctoral Association Career Development Award, U. of Minnesota, \$400	2015
Finalist, University of California President's Postdoctoral Fellowship	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
Awards from Department of Biology, Univ. of Missouri-St. Louis, \$3,500	2004 - 2005
Primate Action Fund, Conservation International, \$3,000	2004

## PRESENTATIONS

### Invited symposia

- Botany, Palm Springs, CA 2025  
Symposium: Reproductive ecology and evolution of plants in stress-prone environments  
“Evolutionary responses to historic drought across the range of scarlet monkeyflower” (**Sheth, S. N.** and 24 co-authors)
- Botany, Palm Springs, CA 2025  
Colloquium: Common gardens in the 21st Century: the intersection between evolution and ecology, science and management  
“Plastic responses to drought in *Mimulus cardinalis* vary among traits and populations” (Cook, E., L., L. Albano, K. Kutella, D. Wang, Flores-Rentería, J. Sexton, C. D. Muir, **S. N. Sheth**, and J. Diez; presented by E. Cook)
- Cologne Spring Meeting, Cologne, Germany 2025  
International Symposium: Plant Ecological Genetics  
“Evolutionary responses to historic drought across the range of scarlet monkeyflower” (**Sheth, S. N.** and 24 co-authors)
- 3rd Joint Congress on Evolutionary Biology, Montreal, Canada 2024  
Symposium: Predicting evolutionary responses to a changing world  
“Predicting evolutionary rescue using landscape genomics” (Anstett, D. N., J. Anstett, **S. N. Sheth**, D. Moxley, M. Jahani, K. Huang, M. Todesco, R. Jordan, J. Lázaro-Guevara, L. Rieseberg, and A. L. Angert; presented by D. Anstett)
- 3rd Joint Congress on Evolutionary Biology (virtual) 2024  
American Society of Naturalists Vice Presidential Symposium: Quantifying organismal function through time to detect ecological and evolutionary responses to global change  
“Evolutionary responses to historic drought across the range of scarlet monkeyflower” (**Sheth, S. N.** and 24 co-authors)
- Ecological Society of America, Portland, OR 2023  
Symposium: Combining ecology and evolutionary knowledge for conservation  
“Using landscape genomics and resurrection studies to understand whether rapid evolution can forestall range contractions” (Angert, A., D. N. Anstett, H. Branch, J. Anstett, **S. N. Sheth**, L. Rieseberg, D. Moxley, M. Todesco, K. Huang, M. Jahani, R. Jordan, and J. Lázaro-Guevara; presented by A. Angert)
- 46th Annual Southern California Botanists Symposium (virtual) 2020  
Living on the edge - Plants in extreme environments  
“The role of demographic and evolutionary processes in buffering populations from climate change”

International Biogeography Society Humboldt-250 Meeting, Quito, Ecuador	2019
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>Wooliver, R.<sup>P</sup></u> , S. Tittes, and <b>S.N. Sheth</b> ; presented by R. Wooliver)	
Green Life Sciences, University of Michigan, Ann Arbor, MI	2018
Symposium: Plant-environment interactions across scales	
“Do demographic compensation and adaptation buffer species from changing climate?”	
Society for the Study of Evolution, Portland, OR	2017
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”	
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 Bignonieae (Bignoniaceae): una perspectiva filogenética” ( <b>Sheth, S.N.</b> , 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 Bignonieae (Bignoniaceae): a phylogenetic perspective” ( <b>Sheth, S.N.</b> , L.G. Lohmann, T. Consiglio, and I. Jiménez)	
<b>Invited seminars</b>	
Biology Lunch Bunch, Department of Biology, University of North Carolina	2025
Graduate Program in Plant Biology and Conservation, Chicago Botanic Garden	2024
Department of Applied Ecology, North Carolina State University	2024
Graduate Program in Plant Biology and Conservation, Chicago Botanic Garden	2024
Department of Plant and Microbial Biology, North Carolina State University	2023
Department of Biology, Utah State University	2023
Department of Plant Biology, Carnegie Institution for Science	2023
Department of Biology, Wake Forest University	2022
Genetics and Genomics Academy, North Carolina State University	2022
Department of Biology, University of Toronto, Mississauga	2022
*** <b>Graduate Student Invited Speaker</b> ***	
Department of Plant Biology, University of Georgia	2021
*** <b>Graduate Student Invited Speaker</b> ***	
Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville	2021
Department of Ecology and Evolutionary Biology, University of Colorado, Boulder	2021
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
*** <b>Graduate Student Invited Speaker</b> ***	
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

Goff, K. A. <sup>g</sup> , M. F. Oldfather, J. Nachlinger, B. Smithers, M. J. Koontz, J. Bishop, C. Bishop, M. T. Burke, and <b>S. N. Sheth</b> . "Limited directional change in mountaintop plant communities over 19 years in the Sierra Nevada and Great Basin, U.S.A." Ecological Society of America, Baltimore, MD (presented by K. A. Goff)	2025
Durán, L. M., N. Ramadoss, <b>S. Sheth</b> , and L. Flores-Rentería. "Investigating genetic spillage in a <i>Erythranthe cardinalis</i> common garden experiment." Ecological Society of America, Long Beach, CA (presented by L. Durán)	2025
Albano, L. J. <sup>p</sup> , R. A. Bingham, S. Corera, C. G. Laufenberg, A. C. Payst, C. D. Muir, and <b>S. N. Sheth</b> . "Range-wide responses to an extreme heat event in <i>Mimulus cardinalis</i> ." Evolution, Athens, GA (presented by L. J. Albano)	2025
Pennington, L. K. <sup>p</sup> , <b>S. N. Sheth</b> , S. J. Franks, E. Hammann, J. T. Anderson. "Range-wide responses to an extreme heat event in <i>Mimulus cardinalis</i> ." Evolution, Athens, GA (presented by L. K. Pennington)	2025
Goff, K. A. <sup>g</sup> , M. F. Oldfather, J. Nachlinger, B. Smithers, M. J. Koontz, J. Bishop, C. Bishop, M. T. Burke, and <b>S. N. Sheth</b> . "Limited directional change in mountaintop plant communities over 19 years in the Sierra Nevada and Great Basin, U.S.A." MtnClim, Lake Tahoe, CA (presented by M. F. Oldfather)	2024
Waits, J., <b>S. Sheth</b> , and L. Flores-Rentería. "Phenological variation and evolution across space and time in <i>Erythranthe cardinalis</i> ." Ecological Society of America, Long Beach, CA (presented by J. Waits)	2024

- Wilborn-Pilotte, O., E. Cook, K. Kutella, textbfS. Sheth, and J. Diez. 2024  
 "Pollination strategy as an evolutionary response to changing climate in  
*Erythranthe cardinalis*." Ecological Society of America, Long Beach, CA  
 (presented by O. Wilborn-Pilotte)
- Anstett, D., J. Anstett, J., **S. Sheth**, D. Moxley, M. Jahani, K. Huang, M. 2023  
 Todesco, R. Jordan, L. Rieseberg, A. Angert. "Does genetic offset predict  
 population decline?" Ecological Society of America, Portland, OR  
 (presented by D. Anstett)
- Anstett, D., J. Anstett, J., **S. Sheth**, D. Moxley, M. Jahani, K. Huang, M. 2023  
 Todesco, R. Jordan, L. Rieseberg, A. Angert. "Does genetic offset predict  
 population decline?" Evolution, Albuquerque, NM (presented by D.  
 Anstett)
- Cheng, B., M. Sasaki, J. M. Barley, S. Gignoux-Wolfsohn, C. G. Hays, M. W. 2023  
 Kelly, A. B. Putnam, **S. N. Sheth**, and A. R. Villeneuve. "Greater local  
 adaptation of thermal limits within marine than terrestrial species"  
 Benthic Ecology Meeting, Miami, FL (presented by B. Cheng)
- Goff, K. A.<sup>g</sup>, M. F. Oldfather, J. Nachlinger, B. Smithers, M. J. Koontz, J. 2022  
 Bishop, C. Bishop, and **S. N. Sheth**. "Plant community responses to  
 climate change over an 18-year period on alpine summits in the Sierra  
 Nevada and Great Basin, USA." MtnClim, Gothic, CO (poster presented  
 by K. A. Goff)
- Lee-Yaw, J. A., McCune J. L., Pironon, S. and **S. N. Sheth**. "How well do 2022  
 species distribution models predict parameters of interest in population  
 biology?" Ecological Society of America; Montreal, Canada (presented by  
 J. Lee-Yaw)
- Preston, J. C, R. Wooliver<sup>P</sup>, H. Driscoll, A. Coughlin<sup>t</sup>, 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 2021  
 in flowering time in *Lasthenia gracilis*, a widespread annual forb." Botany  
 (virtual; presented by R. L. Olliff Yang)
- Smithers, B. V., M. F. Oldfather, M. J. Koontz, J. Bishop, C. Bishop, J. 2020  
 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)
- Wooliver, R.<sup>P</sup>, E.E. Vtipil<sup>g</sup>, and **S.N. Sheth**. "A call for unified study of 2020  
 plant thermal performance in a warming world." Botany (virtual;  
 presented by R. Wooliver)
- Querns, A.<sup>g</sup>, R. Wooliver<sup>P</sup>, M. Vallejo-Marín, and **S.N. Sheth**. "The 2020  
 evolution of thermal performance in native and invasive populations of  
*Mimulus guttatus*." Botany (virtual; poster presented by A. Querns)  
 \*\*\* **Winner of Best Graduate Student Poster in Ecology** \*\*\*
- Wooliver, R.<sup>P</sup>, S. Tittes, and **S.N. Sheth**. "Can plant thermal tolerance 2019  
 evolve under climate change? A comparison of central and edge  
 populations." Southeast Population Ecology and Evolutionary Genetics,  
 Clemson, SC (presented by R. Wooliver)

- Vtipil, E.E.<sup>u,g</sup> 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
- 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 Bignoniaceae (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

Plant Ecology, PB450/550-001, solo instructor 2019 - present

### Colorado State University

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**

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**

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

### **AmeriCorps Partnership for Youth**

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

### **North Carolina State University**

#### ***Postdoctoral associates***

Dr. Lucas Albano	2024 - present
Dr. Rachel Wooliver	2018 - 2020

#### ***Graduate students***

Annabel Lewis (Ph.D.)	2024 - present
Kaleb Goff (Ph.D.)	2021 - present
Emma Vtipilthorpe (Ph.D.)	2020 - 2021
Aleah Querns (M.S.)	2018 - 2020
Emma Vtipil (M.R.)	2019 - 2020

#### ***Undergraduate researchers***

Devin Adas	2021
Brooke Caldwell	2019 - 2020
Sulma Correa	2024
Eve Eddy	2025 - present
Mataeus Funderburk (Honor's thesis student; McNair Scholars Program)	2022 - 2025
Natalie Gold	2019
Mariah Kidd	2019 - 2020
Catherine Laufenberg (Honor's thesis student; NCSU Chilton Research Awardee)	2023 - 2025
Sophie Meng	2022 - 2023
Cristina Payst	2023 - 2025
Daisy Ryan	2020 - 2021
Emily Powell	2021
Jessie Torres	2018 - 2019
Emma Vtipil (Honor's thesis student; NCSU Chilton Research Awardee)	2018 - 2019
Mia Wiegmann	2018 - 2021
Emma Wilson	2021 - 2022
Collin Yurish	2018 - 2019

#### ***Research technicians***

Aeran Coughlin, Lab Manager	2019 - 2021
Derek DeLong, Field Technician	2024
Maggie Evans, Field Technician	2024
Magdalene Lo, Field Technician	2021
MC Moazed, Field Technician	2023
Sahalie Pittman, Field Technician	2025

Malia Reiss, Field Technician	2022
Nathan Ross, Field Technician	2023
Kyla Schmitt, Field Technician	2025
Marissa Strebler, Field Technician	2025
Lindsay Villano, Field Technician	2023

### ***Graduate student committees***

Emily Cook, University of Oregon	2023 - present
Erin Eichenberger, NCSU	2020 - present
Erin Emmott, NCSU	2025 - present
Samuel Flake, NCSU	2018 - 2021
Melina Keighron, NCSU	2022 - present
Jimmy Kieu, Duke University	2024 - 2025
Gwen Kirschke, NCSU	2025 - present
Kira Lindelof, NCSU	2020 - present
Ryan O'Connell, Duke University	2020 - 2024
Simon Pinilla-Gallego, NCSU	2018 - 2021
Alden Sears, NCSU	2023 - present
Catie Sherry, NCSU	2023 - 2024
Anita Simha, Duke University	2020 - 2024
Jordan Waits, San Diego State University	2024
Brook Wallasch, California Polytechnic State University, San Luis Obispo	2024-2025
Dachuan Wang, University of Wisconsin-Madison	2024 - 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**

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**

Department head search committee, Dept. of Plant and Microbial Biology, NCSU 2025  
 Evolution faculty search committee, Dept. of Plant and Microbial Biology, NCSU 2024 - 2025  
 College of Agricultural and Life Sciences Research Committee , NCSU 2024  
 Plant Biology Graduate admissions committee, NCSU 2018 - 2024  
 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

Member, Hamilton Award for Outstanding Graduate Student Presentation Committee, Society for the Study of Evolution	2024 - present
Chair, Workshop and Regional Society Committee, American Society of Naturalists	2023
Member, Workshop and Regional Society Committee, American Society of Naturalists	2021 - 2022
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
Panelist: NSF Division of Environmental Biology	2022
Proposal reviewer: NSF Division of Environmental Biology	2014, 2021, 2022
Book proposal reviewer: Oxford University Press	2018

## Other service

Science Director and Board Member: GLORIA (Global Observation Research Initiative in Alpine Environments) Great Basin	2018 - present
Volunteer: Global Observation Research Initiative in Alpine Environments (GLORIA) Great Basin	2017 - present
Invited Speaker, New Hope Audubon Society Monthly Meeting, North Carolina Botanical Garden, Chapel Hill, NC. "Species ranges in a changing world"	2022
Invited Panelist, Community Dialogue on Asian Americans and Pacific Islanders in Ecology and Evolutionary Biology (virtual), Northeastern University Marine Science Center	2022
Invited Panelist, Forestry and Environmental Resources Leadership Board's Research Panel and Mixer, NCSU	2022
Invited Panelist, PhD Career Panel (virtual), Graduate Degree Program in Ecology, Colorado State University	2021
Exhibitor, Darwin Day, North Carolina Museum of Natural Sciences	2019, 2021, 2022
Primary Atlaser (Cary SE Priority Block) and Volunteer: North Carolina Bird Atlas	2021 - present
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

Climate-Demography Workshop, Rice University, Houston, TX	2023
Working group on evolutionary processes in Long-Term Ecological Research sites (Evo-LTER), Sevilleta National Wildlife Refuge LTER, La Joya, NM	2022
Mentoring Makes a Difference Workshop Series, North Carolina State University (virtual)	2022
HHMI Inclusive Excellence Faculty Workshop, North Carolina State University, Raleigh, NC	2021
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 Bignoniaceae (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

Faculty Affiliate: NC State Global One Health Academy  
Faculty Affiliate: NC State Genetics and Genomics Academy  
Faculty Affiliate: Southeast Climate Adaptation Science Center  
American Society of Naturalists  
Botanical Society of America  
Ecological Society of America  
Society for the Study of Evolution

*last updated September 18, 2025*