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Texas Tech University
Department of Biological Sciences
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Education

Ph.D. Biological Sciences, Purdue University, 2016

B.S. Biological Sciences, Purdue University, 2010

Professional Appointments

Assistant Professor, Texas Tech University, 2017 – Present

Adjunct Assistant Professor, Purdue University, 2016 – Present

Postdoctoral Fellow, Lawrence Berkeley National Laboratory, 2016 – 2017

Postdoctoral Research Assistant, Purdue University, 2016

NASA Earth and Space Science Fellow, Purdue University, 2013 – 2016

Publication Summary as of April 25, 2022 (statistics from Google Scholar; full citations below)

Peer-reviewed publications: 50 (33 with TTU affiliation)

Total journal article citations: 2,141

First publication: 2013

h-index: 17

i-10 index: 23

External Funding Summary as of April 25, 2022 (all dollar figures to TTU; full details below)

Active and recommended external funding: \$2,250,043

Previous external funding: \$22,482

Total TTU external funding (2017-present): \$2,272,525

Selected Awards

Early Career Fellow (2022-2027). Ecological Society of America.

Outstanding Researcher Award (2022). Office of Research and Innovation (ORI). Texas Tech University.

Outstanding Faculty Mentor Award (2022). Center for Transformative Undergraduate Experiences (TrUE). Texas Tech University.

Open Access Data Award (2019). Texas Tech University Libraries. Texas Tech University.

Plant, Cell, & Environment Postdoctoral Award (2017). Ecological Society of America.

Outstanding Graduate Student (2014). Department of Biological Sciences. Purdue University.

NASA Earth and Space Science Fellowship (2013). National Aeronautics and Space Administration (NASA).

PCCRC Graduate Fellowship (2013). Purdue Climate Change Research Center. Purdue University.

NSF GRFP-Honorable Mention (2012). National Science Foundation (NSF).

Lindsey Fellowship in Ecology (2011). Department of Biological Sciences. Purdue University.

Ross Graduate Fellowship (2010). Purdue University.

Peer-Reviewed Journal Articles with TTU Affiliation (* = corresponding author; † = student or postdoctoral mentee; JIF = 2020 ISI journal impact factor)

50. Tao W, K Mao, J He, **NG Smith**, Y Qiao, J Guo, H Yang, W Wang, J Liu, and L Chen (Accepted). Daytime warming triggers tree growth decline in the Northern Hemisphere. *Global Change Biology* (JIF: 10.9).
49. Kong, RS†, DA Way, HAL Henry, and **NG Smith** (In Press). Stomatal conductance, not biochemistry, drives low temperature acclimation of photosynthesis in *Populus balsamifera* regardless of nitrogen availability. *Plant Biology* (JIF: 3.1).
48. Dong, N, IJ Wright, JM Chen, X Luo, H Wang, TF Keenan, **NG Smith**, and IC Prentice (In Press). Rising CO₂ and warming reduce global canopy demand for nitrogen. *New Phytologist* (JIF: 10.2).
47. Scott, HG† and **NG Smith** (2022). A model of C₄ photosynthetic acclimation based on least-cost optimality theory suitable for Earth System Model incorporation. *Journal of Advances in Modeling Earth Systems* (JIF: 6.7) 14(3): e2021MS002470.
46. Kyker-Snowman, E, DL Lombardozzi, GB Bonan, SJ Cheng, JS Dukes, SD Frey, EM Jacobs, R McNellis†, JM Rady, **NG Smith**, RQ Thomas, WW Wieder, and AS Grandy (2022). Increasing the spatial and temporal impact of ecological research: A roadmap for integrating a novel terrestrial process into an Earth system model. *Global Change Biology* (JIF: 10.9) 28(2): 665-684.
45. Wang, J, Z Xi, X He, S Chen, S Rossi, **NG Smith**, J Liu, and L Chen (2021). Contrasting temporal variations in responses of leaf unfolding to daytime and nighttime warming. *Global Change Biology* (JIF: 10.9) 27(20): 5084-5093.
44. He, X, C Shanshan, J Wang, **NG Smith**, S Rossi, H Yang, J Liu, and L Chen (2021). Delaying effect of humidity on leaf unfolding in Europe. *Science of the Total Environment* (JIF: 8.0) 800: 149563.
43. Luo, X, TF Keenan, JM Chen, H Croft, IC Prentice, **NG Smith**, AP Walker, H Wang, C Xu, Y Zhang (2021). Global variation in the fraction of leaf nitrogen allocated to photosynthesis. *Nature Communications* (JIF: 14.9) 12: 4866.
42. Perkowski, EA†, EF Waring†, and **NG Smith** (2021). Root mass carbon costs to acquire nitrogen are determined by nitrogen and light availability in two species with different nitrogen acquisition strategies. *Journal of Experimental Botany* (JIF: 7.0) 72(15): 5766-5776.
41. Harrison, SP, W Cramer, O Franklin, IC Prentice, H Wang, Å Brännström, H de Boer, U Dieckmann, J Joshi, TF Keenan, A Lavergne, S Manzoni, G Mengoli, C Morfopoulos, J Peñuelas, S Pietsch, K Rebel, Y Ryu, **NG Smith**, B Stocker, and IJ Wright (2021). Eco-evolutionary optimality as a means to improve vegetation and land-surface models. *New Phytologist* (JIF: 10.2) 23(6): 2125-2141.
40. Bialic-Murphy, L, **NG Smith**, P Voothuluru, R McElderry, S Cassidy, M Roche, S Kivlin, Stephanie, and S Kalisz (2021). Invasion-induced root-fungal disruptions alter plant water and nitrogen economies. *Ecology Letters* (JIF: 9.5) 24(6): 1145-1156.
39. Bell, A† and **NG Smith** (2021). Soil salinity has species-specific effects on the growth and nutrient quality of four Texas grasses. *Rangeland Ecology & Management* (JIF: 2.0) 77: 39-45.

38. Liang, M, **NG Smith**, J Chen, Y Wu, Z Guo, E Gornish, and C Liang (2021). Shifts in plant composition mediate grazing effects on carbon cycling in grasslands. *Journal of Applied Ecology* (JIF: 6.5) 58(3): 518-527.
37. Ely, KS, A Rogers, DA Agarwal, EA Ainsworth, L Albert, A Ali, J Anderson, MJ Aspinwall, C Bellasio, C Bernacchi, S Bonnage, TN Buckley, J Bunce, AC Burnett, FA Busch, A Cavanagh, LA Cernusak, R Crystal-Ornelas, J Damerow, KJ Davidson, MG De Kauwe, MC Dietze, TF Domingues, ME Dusenage, DS Ellsworth, JR Evans, PPG Gauthier, BO Gimenez, EP Gordon, CM Gough, AH Halbritter, DT Hanson, Mary Heskell, JA Hogan, JR Hupp, K Jardine, J Kattge, T Keenan, J Kromdijk, DP Kumarathunge, J Lamour, ADB Leakey, DS LeBauer, Q Li, MR Lundgren, N McDowell, K Meacham-Hensold, BE Medlyn, DJP Moore, R Negrón-Juárez, Ü Niinemets, CP Osborne, AL Pivovarov, H Poorter, SC Reed, Y Ryu, A Sanz-Saez, SC Schmiege, SP Serbin, TD Sharkey, M Slot, **NG Smith**, BV Sonawane, PF South, DC Souza, JR Stinziano, E Stuart-Haëntjens, SH Taylor, MD Tejera, J Uddling, V Vandvik, C Varadharajan, AP Walker, BJ Walker, JM Warren, DA Way, BT Wolfe, J Wu, SD Wullschleger, C Xu, Z Yan, and D Yang (2021). A reporting format for leaf-level gas exchange data and metadata. *Ecological Informatics* (JIF: 3.1) 61: 101232.
36. Ploughe, LW, **NG Smith***, MJ Schuster, and JS Dukes (2021). Increased rainfall variability and nitrogen deposition accelerate succession along a common sere. *Ecosphere* (JIF: 3.2) 12(1): e03313.
35. Licht, J and **NG Smith** (2021). Pyrogenic carbon improves the physiological performance of a C₃ species planted on a green roof. *Israel Journal of Ecology & Evolution* (JIF: 0.6) 67(1): 1-8.
34. **Smith, NG*** and TF Keenan (2020). Mechanisms underlying leaf photosynthetic acclimation to warming and elevated CO₂ as inferred from least-cost optimality theory. *Global Change Biology* (JIF: 10.9) 26(9): 5202-5216.
33. Chen, L, H Hänninen, S Rossi, **NG Smith**, S Pau, Z Liu, G Feng, J Gao, and J Liu (2020). Leaf senescence exhibits stronger climatic responses during warm than during cold autumns. *Nature Climate Change* (JIF: 25.3) 10: 777-780.
32. **Smith, NG***, RE McNellis†, and JS Dukes (2020). No acclimation: Instantaneous responses to temperature maintain homeostatic photosynthetic rates under experimental warming across a precipitation gradient in *Ulmus americana*. *Annals of Botany – Plants* (JIF: 3.3) 12(4): plaa027.
31. Paillassa, J, IJ Wright, IC Prentice, S Pepin, **NG Smith**, G Ethier, A Westerband, LJ Lamarque, H Wang, WK Cornwell, and V Maire (2020). When and where soil is important to modify the carbon and water economy of leaves. *New Phytologist* (JIF: 10.2) 228(1): 121-135.
30. Stocker, BD, H Wang, **NG Smith**, SP Harrison, TF Keenan, D Sandoval, T Davis, and IC Prentice (2020). P-model v1.0: An optimality-based light use efficiency model for simulating ecosystem gross primary production. *Geoscientific Model Development* (JIF: 6.1) 13: 1545-1581.
29. Wang, H, OA Atkin, TF Keenan, **NG Smith**, IJ Wright, K Bloomfield, J Kattge, PB Reich, and IC Prentice (2020). Acclimation of leaf respiration consistent with optimal photosynthetic capacity. *Global Change Biology* (JIF: 10.9) 26(4): 2573-2583.

28. Kattge, J and the TRY plant traits database contributors (including **NG Smith**) (2020). TRY plant trait database – enhanced coverage and open access. *Global Change Biology* (JIF: 10.9) 26(1): 119-188.
****Thomson Reuters “Highly cited paper” (top 1% in Environment/Ecology discipline)****
27. Licht, J and **NG Smith** (2020). Pyrogenic carbon increases pitch pine seedling growth, soil moisture retention and photosynthetic water use efficiency in the field. *Frontiers in Forests and Global Change* (JIF: N/A, too young) 3: 31.
26. Liu, Z, L Chen, **NG Smith**, W Yun, X Chen, G Zhou, SA Alam, K Lin, T Zhao, P Zhou, C Chu, H Ma, and J Liu (2019). Global divergent responses of primary productivity to water, energy, and CO₂. *Environmental Research Letters* (JIF: 6.8) 14(12): 124044.
25. **Smith, NG***, G Li, and JS Dukes (2019). Short-term thermal acclimation of dark respiration is greater in non-photosynthetic than in photosynthetic tissues. *Annals of Botany – Plants* (JIF: 3.3) 11(6): plz064.
24. Kumarathunge, DP, BE Medlyn, JE Drake, MG Tjoelker, MJ Aspinwall, M Battaglia, FJ Cano, KR Carter, MA Cavaleri, LA Cernusak, JQ Chambers, KY Crous, MG De Kauwe, DN Dillaway, E Dreyer, DS Ellsworth, O Ghannoum, Q Han, K Hikosaka, AM Jensen, JWG Kelly, EL Kruger, LM Mercado, Y Onoda, PB Reich, A Rogers, M Slot, **NG Smith**, L Tarvainen, DT Tissue, HF Togashi, ES Tribuzy, J Uddling, A Varhammar, G Wallin, JM Warren, and DA Way (2019). Acclimation and adaptation components of the temperature dependence of plant photosynthesis at the global scale. *New Phytologist* (JIF: 10.2) 222(2): 768-784.
****Thomson Reuters “Highly cited paper” (top 1% in Plant & Animal Science discipline)****
23. Liang, M, J Chen, **NG Smith**, X Bai, C Jia, Z Li, and C Liang (2019). Changes and regulations of net ecosystem CO₂ exchange across temporal scales in the Alxa Desert. *Journal of Arid Environments* (JIF: 2.2) 164: 78-84.
22. **Smith, NG***, TF Keenan, IC Prentice, H Wang, IJ Wright, Ü Niinemets, KY Crous, TF Domingues, R Guerrieri, FY Ishida, J Kattge, EL Kruger, V Maire, A Rogers, SP Serbin, L Tarvainen, HF Togashi, PA Townsend, M Wang, LK Weerasinghe, and S Zhou (2019). Global photosynthetic capacity is optimized to the environment. *Ecology Letters* (JIF: 9.5) 22(3): 506-517.
****Faculty of 1000 recommended****
****Thomson Reuters “Highly cited paper” (top 1% in Environment/Ecology discipline)****
****Ecology Letters Top Downloaded Paper 2018-2019 (top 10%)****
21. **Smith, NG*** and JS Dukes (2018). Drivers of leaf carbon exchange across biomes at the continental scale. *Ecology* (JIF: 5.5) 99(7): 1610-1620.
20. Lombardozi, DL, **NG Smith**, SJ Cheng, JS Dukes, T Sharkey, A Rogers, RA Fisher, and GB Bonan (2018). Triose phosphate limitation in photosynthesis models reduces leaf photosynthesis and global terrestrial carbon storage. *Environmental Research Letters* (JIF: 6.8) 13(7): 074025.
19. Rodgers, VL, **NG Smith**, SS Hoepfner, and JS Dukes (2018). Warming increases the sensitivity of seedling growth capacity to rainfall in six temperate deciduous species. *Annals of Botany – Plants* (JIF: 3.3) 10(1): ply003.

18. Licht, J, **NG Smith** (2018). The influence of lignocellulosic and hemicellulosic biochar on photosynthesis and water use efficiency in seedlings from a Northeastern U.S. pine-oak ecosystem. *Journal of Sustainable Forestry* (JIF: 1.5) 37(1): 25-37.

Peer-Reviewed Journal Articles with Prior Affiliations (* = corresponding author; † = student or postdoctoral mentee; JIF = 2019 ISI journal impact factor)

17. Li, G, Y Mu, Y Liu, **NG Smith**, and S Sun (2017). Effect of microtopography on soil respiration in an alpine meadow of the Qinghai-Tibetan plateau. *Plant and Soil* (JIF: 4.2) 421(1): 147-155.

16. **Smith, NG*** and JS Dukes (2017). Short-term acclimation to warmer temperatures increases leaf carbon exchange processes across plant types. *Global Change Biology* (JIF: 10.9) 23(11): 4840-4853.

15. **Smith, NG***, DL Lombardozzi, A Tawfik, GB Bonan, and JS Dukes (2017). Biophysical consequences of photosynthetic temperature acclimation for climate. *Journal of Advances in Modeling Earth Systems* (JIF: 6.7) 9(1): 536-547.

14. **Smith*, NG** and JS Dukes (2017). LCE: Leaf carbon exchange dataset for tropical, temperate, and boreal species of North and Central America. *Ecology* (JIF: 5.5) 98(11): 2978.

13. Licht, J, **NG Smith**, P Mitchell, and F Shields (2017). Impact of lignocellulosic and hemicellulosic biochar on soil moisture in low clay soils. *Journal of Plant Nutrition and Soil Science* (JIF: 2.4) 180(5): 576-584.

12. **Smith, NG***, SL Malyshev, EN Shevliakova, J Kattge, and JS Dukes (2016). Foliar temperature acclimation reduces simulated carbon sensitivity to climate. *Nature Climate Change* (JIF: 25.3) 6(4): 407-411.

11. **Smith, NG***, MJ Schuster, and JS Dukes (2016). Rainfall variability and nitrogen addition synergistically reduce plant diversity in a restored tallgrass prairie. *Journal of Applied Ecology* (JIF: 6.5) 53(2): 579-586.

10. **Smith, NG***, GP Pold, CE Goranson, and JS Dukes (2016). Characterizing the drivers of seedling leaf gas exchange responses to warming and altered precipitation: indirect and direct effects. *Annals of Botany – Plants* (JIF: 3.3) 8: plw066.

9. Schuster, MJ, **NG Smith**, and JS Dukes (2016). Responses of aboveground C and N pools to rainfall variability and nitrogen deposition are mediated by seasonal precipitation and plant community dynamics. *Biogeochemistry* (JIF: 4.8) 129(3): 389-400.

8. Lombardozzi, D, GB Bonan, **NG Smith**, JS Dukes, and RA Fisher (2015). Temperature acclimation of photosynthesis and respiration: a key uncertainty in the carbon cycle-climate feedback. *Geophysical Research Letters* (JIF: 4.7) 42(20): 8624-8631.

7. Atkin, OA and the GlobResp team (including **NG Smith**) (2015). Global variability in leaf respiration among plant functional types in relation to climate and leaf traits. *New Phytologist* (JIF: 10.2) 206(2), 614-636.

****Thomson Reuters “Highly cited paper” (top 1% in Plant & Animal Science discipline)****

6. **Smith, NG*** (2014). Testing for temperature acclimation of plant carbon exchange: a comment on “Global patterns of the responses of leaf-level photosynthesis and respiration in terrestrial plants to experimental warming”. *Journal of Plant Ecology* (JIF: 1.8) 8(3): 333-334.

5. **Smith, NG***, VL Rodgers, ER Brzostek, A Kulmatiski, ML Avolio, DL Hoover, SE Koerner, K Grant, A Jentsch, S Fatichi, and D Niyogi (2014). Towards a better integration of biological data from precipitation manipulation experiments into land surface models. *Reviews of Geophysics* (JIF: 22.0) 52(3): 412-434.

4. **Smith, NG***, and JS Dukes (2013). Plant respiration and photosynthesis in global scale models: incorporating acclimation to temperature and CO₂. *Global Change Biology* (JIF: 10.9) 19(1), 45-63.
****Thomson Reuters “Highly cited paper” (top 1% in Environment/Ecology discipline)****

Peer-Reviewed Book Chapters; * = corresponding author

3. **Smith, NG*** (2017). Plant respiration responses to elevated CO₂: an overview from cellular processes to global impacts. In *Plant Respiration: Metabolic Fluxes and Carbon Balance* (Eds: G. Tcherkez and J. Ghashghaie). Pp. 69-87. New York: Springer-Verlag New York, Inc.

Peer-Reviewed Meeting Reports

2. Cheng, SJ, **NG Smith**, and A Marklein (2018). Modeling global change ecology in a 400+ ppm world. *Eos*, 99.

1. Sanders-Demott, R, **NG Smith**, PH Templer, and JS Dukes (2016). Towards an integrated understanding of terrestrial ecosystem feedbacks to climate change. *New Phytologist* (JIF: 10.2) 209(4): 1363-1365.

Preprints († = student or postdoctoral mentee)

6. Gu, H, Y Qiao, Z Xi, S Rossi, **NG Smith**, J Liu, and L Chen (2022). Warming-induced increase in carbon uptake leads to earlier spring phenology. *Research Square*. DOI: 10.21203/rs.3.rs-1390761/v1.

5. Chen, L, S Rossi, **NG Smith**, and J Liu (2021). Shifts in leaf senescence across the Northern Hemisphere in response to seasonal warming. *BioRxiv*. DOI: 10.1101/2021.07.23.453498.

4. Scott, HG† and **NG Smith** (2021). A model of C₄ photosynthetic acclimation based on least-cost optimality theory suitable for Earth System Model incorporation. *Earth and Space Science Open Archive*. DOI: 10.1002/essoar.10505842.1.

3. Bialic-Murphy, L, **NG Smith**, P Voothuluru, R McElderry, M Roche, C Steven, S Kivlin, and S Kalisz (2020). Invasion-induced root-fungal disruptions alter plant water and nitrogen economies. *Authorea*. DOI: 10.20213/rs.3.rs-49360/v1.

2. Stocker, BD, H Wang, **NG Smith**, SP Harrison, TF Keenan, D Sandoval, T Davis, and IC Prentice (2019). P-model v1.0: An optimality-based light use efficiency model for simulating ecosystem gross primary production. *Geoscientific Model Development Discussions*. DOI: 10.5194/gmd-2019-200.

1. Wang, H, OK Atkin, TF Keenan, **NG Smith**, IJ Wright, KJ Bloomfield, J Kattge, PB Reich, and IC Prentice (2018). Thermal acclimation of leaf respiration consistent with optimal plant function. *BioRxiv*. DOI: 10.1101/434084.

Published Codesets and Datasets († = student or postdoctoral mentee)

16. **Smith, NG** and JL Licht (2021). Mount Desert Island *Pinus rigida* dataset. *Zenodo/GitHub*. DOI: 10.5281/zenodo.4663255.

15. Scott, HG† and **NG Smith** (2021). C4model v1.0.1. *Zenodo/GitHub*. DOI: 10.5281/zenodo.4420326.

14. Bell, A† and **NG Smith** (2020). Texas grass salinity tolerance data repository. *Zenodo/GitHub*. DOI: 10.5281/zenodo.3923044.

13. Waring, EF†, EA Perkowski†, and **NG Smith** (2020). Light-by-nitrogen greenhouse experiment dataset and R code. *Zenodo/GitHub*. DOI: 10.5281/zenodo.4091580.

12. **Smith, NG** (2020). PRICLE resampling dataset and analysis scripts. *Zenodo/GitHub*. DOI: 10.5281/zenodo.3973696.

11. **Smith, NG** (2020). BACE 2016 gas exchange dataset. *Zenodo/GitHub*. DOI: 10.5281/zenodo.3600547.

10. **Smith, NG** and JL Licht (2020). Pitch pine pyrogenic carbon dataset. *Zenodo/GitHub*. DOI: 10.5281/zenodo.3708295.

9. **Smith, NG** (2019). Multi-tissue respiratory thermal acclimation dataset. *Zenodo/GitHub*. DOI: 10.5281/zenodo.3445984.

8. **Smith, NG** (2018). Optimal V_{cmax} calculation in R. *Zenodo/GitHub*. DOI: 10.5281/zenodo.1482044.

7. **Smith, NG** (2018). Purdue University Growth Chamber Dataset. *Zenodo/GitHub*. DOI: 10.5281/zenodo.2621230.

6. **Smith, NG** and JS Dukes (2017). LCE: Leaf carbon exchange dataset for tropical, temperate, and boreal species of North and Central America. *GitHub*. DOI: 10.5281/zenodo.826930.

5. **Smith, NG** (2017). Growth chamber acclimation dataset. *Purdue University Research Repository (PURR)*. DOI: 10.4231/R77H1GKS.

4. **Smith, NG** (2017). Biophysical consequences of photosynthetic temperature acclimation for climate data. *Purdue University Research Repository (PURR)*. DOI: 10.4231/R7V69GK9.

3. **Smith, NG** and JS Dukes (2016). BACE gas exchange 2011. *Purdue University Research Repository (PURR)*. DOI: 10.4231/R7959FJ4.

2. **Smith, NG**, MJ Schuster, and JS Dukes (2015). PRICLE community composition and soil moisture 2012-2013. *Purdue University Research Repository (PURR)*. DOI: 10.4231/R7TQ5ZG3.

1. Atkin, OA and 62 others (including **NG Smith**) (2015). GlobResp – Global Leaf Respiration Database. DOI: 10.1111/nph.13253.

Active and Recommended External Funding (total direct + indirect TTU amount: \$2,250,043)

Land Ecosystem Models based On New Theory, obseRvations, and ExperimEnts (LEMONTREE)

- Funder: Schmidt Futures Virtual Earth Systems Research Institute
- Role: Co-PI
- Total amount (direct + indirect): \$9,997,983 (\$705,009 to TTU)
 - Direct amount to TTU: \$604,910
- Dates: 01/2021– 12/2025
- Percent contribution: 100% of TTU amount
- Person months: 0.25
- Status: Awarded
- Cayuse award #: A21-0321-001

CAREER: Improving understanding and prediction of photosynthetic acclimation to global change

- Funder: National Science Foundation
- Role: PI
- Total amount (direct + indirect): \$1,142,853 (100% to TTU)
 - Direct amount to TTU: \$842,517
- Dates: 09/2021 – 08/2026
- Percent contribution: 100%
- Person months: 2
- Status: Awarded
- Cayuse award #: A22-0001-001

Defining the drivers of plant nitrogen across resource gradients to improve agricultural, ranch, and wildlife management

- Funder: Braun and Gresham Attorneys at Law
- Program: Texas Ecological Laboratory
- Role: PI
- Total amount (direct + indirect): \$13,155 (100% to TTU)
 - Direct amount to TTU: \$12,529
- Dates: 01/2021 – 03/2022
- Percent contribution: 100%
- Person months: 0
- Status: Awarded
- Cayuse award #: A21-0111-001

Measuring pitch pine physical and chemical defense mechanisms in historically and culturally important forests in Concord, MA

- Funder: United States Department of Interior, National Parks Service
- Program: Preservation Technology and Training Grants
- Role: PI

- Total amount (direct + indirect): \$19,961 (100% to TTU)
 - Direct amount to TTU: \$14,971
- Dates: 08/2020 – 08/2022 (following NCE)
- Percent contribution: 100%
- Person months: 0.1
- Status: Awarded
- Cayuse award #: A20-0236-001

Proposal to Host the Department of Interior’s South-Central Climate Science Center

- Funder: United States Department of the Interior
- Role: Key Participant
- Total amount (direct + indirect): \$319,066 (100% to TTU)
 - Direct amount to TTU: \$156,342
- Dates: 08/2019 – 07/2022
- Percent contribution: 5%
- Person months: 0.1
- Status: Awarded
- Cayuse award #: A19-0286-001

Potato Cropping System Intervention – Kenya

- Funder: United States Department of Agriculture – Foreign Agricultural Service
- Program: Norman E. Borlaug International Agricultural Science and Technology Fellowship Program
- Role: PI and primary mentor
- Total amount (direct + indirect): \$49,999 (100% to TTU)
 - Direct amount to TTU: \$45,454
- Dates: 09/2019 – 04/2023 (following NCE)
- Percent contribution: 99%
- Person months: 0.75
- Status: Awarded
- Cayuse award #: A19-0053-001

Active and Recommended Internal Funding (total TTU amount: \$70,500; † = mentee funding for work done in Smith Lab)

Creating Livable Futures

- Funder: Texas Tech University Center for Global Communication
- Role: Collaborator
- Total amount: \$40,500
- Dates: 2019-2022
- Percent contribution: 8%

Doctoral Dissertation Completion Grant†

- Funder: Texas Tech University Center Graduate School
- Role: Faculty Mentor

- Total amount: \$30,000
- Dates: 2022-2023

Invited First Author Oral Presentations († = student or postdoctoral mentee)

Smith, NG (2022; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Department of Plant Biology. Michigan State University. Virtual (COVID-19).

Smith, NG (2021; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Department of Ecology and Evolutionary Biology. University of Michigan. Ann Arbor, MI, USA.

Smith, NG (2021; *Invited*). Why plants matter for climate change. TTU Climate Center Science by the Glass. Virtual (COVID-19).

Smith, NG (2021; *Invited*). C₄ photosynthesis in Earth System Models: past, present, and future. USGS Powell Center Working Group meeting on C₄ photosynthesis. Virtual (COVID-19).

Smith, NG (2021; *Invited*). Using optimality theory to better understand photosynthetic acclimation. International Symposium for Young Scholars on Global Change and Biological Acclimation (Henan University). Virtual (COVID-19).

Smith, NG (2020; *Invited*). Using plant ecophysiological theory to derive mechanisms from large-scale heterogeneous datasets. Annual meeting of the Ecological Society of America. Virtual (COVID-19; originally Salt Lake City, UT, USA).

Smith, NG (2020; cancelled due to COVID-19; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Department of Ecosystem Science and Management. Texas A&M University. College Station, TX, USA.

Smith, NG (2020; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Ecology and Evolutionary Biology Seminar. Texas Tech University. Lubbock, TX, USA.

Smith, NG (2020; *Invited*). The resilience of West Texas flora. Climate Change and Effects in Trans-Pecos Texas. Big Bend Chapter of the Texas Native Plant Society. Alpine, TX, USA.

Smith, NG (2019; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Department of Microbiology and Plant Biology. University of Oklahoma. Norman, OK, USA.

Smith, NG (2019; *Invited*). Plants aren't dumb: Using optimality theory to address big questions in plant ecophysiology. Department of Integrative Biology. University of Texas - Austin. Austin, TX, USA.

Smith, NG, EF Waring†, and HG Scott† (2019; *Invited*). Photosynthetic acclimation through the lens of optimality. Annual meeting of the Society for Mathematical Biology. Montreal, Quebec, Canada.

Smith, NG, H Wang, TF Keenan, IC Prentice, and JS Dukes (2018; *Invited*). Photosynthetic acclimation to warming: theory, data, and projections. Annual meeting of the Ecological Society of America. New Orleans, LA, USA.

Smith, NG (2018; *Invited*). Resilience of Texas Flora. Seminar on rhetoric, technical communication, and the story of water and place. Lubbock, TX, USA.

Smith, NG, TF Keenan, H Wang, and IC Prentice (2017; *Invited*). Predicting photosynthetic capacity from first principles. Photosynthesis, carbon fixation, and the environment symposium. University of California Berkeley. Berkeley, CA, USA.

Smith, NG (2017; *Invited*). Plant acclimation to temperature: implications for modeling biosphere-atmosphere feedbacks. Climate Brownbag. Lawrence Berkeley National Lab. Berkeley, CA, USA.

Smith, NG (2017; *Invited*). Using plant physiology to improve understanding of terrestrial biosphere-atmosphere interactions. Department of Biological Sciences. Texas Tech University. Lubbock, TX, USA.

Smith, NG (2017; *Invited*). Plants in the climate system. Texas Tech Climate Science Center Symposium. Texas Tech Climate Science Center. Lubbock, TX, USA.

Smith, NG and JS Dukes (2012; *Invited*). The carbon use efficiency of deciduous tree seedling in response to warming and altered precipitation. Annual meeting of the Ecological Society of America. Portland, OR, USA.

Smith, NG and JS Dukes (2011; *Invited*). The influence of altered precipitation and soil moisture on tree photosynthetic acclimation to temperature. Annual meeting of the Ecological Society of America. Austin, TX, USA.

Other Selected Oral Presentations († = student or postdoctoral mentee)

Ren, Y, H Wang, SP Harrison, IC Prentice, PB Reich, **NG Smith**, and A Stefanski (2022). Nighttime temperature and optimal photosynthetic capacity over the past fortnight jointly control the acclimation of leaf respiration. Annual meeting of the European Geophysical Union. Virtual (Vienna, Austria).

NG Smith, Q Zhu, TF Keenan, and W Riley (2022). Reductions in photosynthetic nitrogen demand due to elevated CO₂ increases simulated future ecosystem carbon storage. Annual meeting of the European Geophysical Union. Virtual (Vienna, Austria).

Perkowski, EA†, DW Frey, CL Goodale, and **NG Smith** (2021). Nutrient availability increases leaf nitrogen at the expense of whole plant growth in a closed canopy temperate forest. Annual Meeting of Ecological Society of America. Ecological Society of America. Virtual (COVID-19).

EA Perkowski†, Waring, EF†, and **NG Smith** (2021). Carbon costs to acquire nitrogen are determined by interactions between nitrogen availability and light availability in two species with different acquisition strategies. Botany 2021. Botanical Society of America. Virtual (COVID-19).

Villeda, J†, C Coker, M Slimp, Z Bailey, MG Johnson, and **NG Smith** (2021). Correlation of plant traits along a fast-slow continuum using 50-year old herbarium specimens. Botany 2021. Botanical Society of America. Virtual (COVID-19).

Dong, N, IC Prentice, IJ Wright, X Luo, and **NG Smith** (2021). Rising CO₂ and warming lead to declining global canopy demand for nitrogen. Annual meeting of the European Geophysical Union. Virtual (COVID-19; originally Vienna, Austria).

Villeda, J† and **NG Smith** (2021). Correlation of plant traits along a fast-slow continuum. Texas Tech University Undergraduate Research Conference. Virtual (COVID-19; originally Lubbock, TX, USA).

Smith, NG, TF Keenan, Q Zhu, and WJ Riley (2020). How does optimal photosynthetic acclimation affect future carbon and nutrient cycling? Fall meeting of the American Geophysical Union. Virtual (COVID 19; originally San Francisco, CA, USA).

McNellis, R† and **NG Smith** (2020). Leaf traits drive seasonal changes in the albedo of agricultural systems. Annual Meeting of Ecological Society of America. Ecological Society of America. Virtual (COVID-19; originally Salt Lake City, UT, USA).

Waring, EF†, EA Perkowski†, and **NG Smith** (2020). Nitrogen acquisition strategy and photosynthetic demand drive allocation responses in cotton and soybean. Botany 2020. Botanical Society of America. Virtual (COVID-19; originally Anchorage, AK, USA).

Smith, NG (2020). Using least cost optimality to reliably simulate plant acclimation. CESM Land Model and Biogeochemistry Working Group Meeting. Boulder, CO, USA.

Smith, NG, EF Waring†, HG Scott†, and TF Keenan (2019). Using optimization to better understand leaf-to-whole plant acclimation. Fall meeting of the American Geophysical Union. San Francisco, CA, USA.

Chavana-Bryant, C, TF Keenan, and **NG Smith** (2019). Examining optimal photosynthetic profiles within vegetation canopies. Fall meeting of the American Geophysical Union. San Francisco, CA, USA.

Dong, N, IJ Wright, IC Prentice, OK Atkin, KJ Bloomfield, SM Gleason, H Wang, V Maire, and **NG Smith** (2019). Global bioclimatic controls of leaf nitrogen: an implementation of least-cost optimality theory. Fall meeting of the American Geophysical Union. San Francisco, CA, USA.

Smith, NG, EF Waring†, and HG Scott† (2019). Understanding photosynthetic acclimation over space and time using optimality theory. Annual meeting of the Ecological Society of America. Louisville, KY, USA.

Waring, EF† and **NG Smith** (2019). Allocation responses to nitrogen addition depend on photosynthetic demand and nitrogen acquisition strategy. Annual meeting of the Ecological Society of America. Louisville, KY, USA.

Scott, HG† and **NG Smith** (2019). Novel theoretical model for optimal C₄ photosynthesis: Implications for Earth System Modeling. Annual meeting of the Ecological Society of America. Louisville, KY, USA.

Waring, EF† and **NG Smith** (2019). Nitrogen fertilization does not increase leaf-level carbon assimilation. Gordon Research Symposium: CO₂ Assimilation in Plants from Genome to Biome. Newry, ME, USA.

Perkowski, EA† and **NG Smith** (2019). The influence of microbial symbioses on leaf- and whole-plant-level acclimation to elevated carbon dioxide. Texas Tech Annual Biological Sciences Symposium. Lubbock, TX, USA.

Wang, H, IC Prentice, OK Atkin, TF Keenan, **NG Smith**, and IJ Wright (2018). Acclimation of respiration to warming consistent with optimal plant function. Fall meeting of the American Geophysical Union. Washington, DC, USA.

Waring, EF† and **NG Smith, NG** (2018). Nitrogen fertilization does not consistently increase leaf-level influencers of net primary productivity. Annual meeting of the Ecological Society of America. New Orleans, LA, USA.

Wang, H, IC Prentice, OK Atkin, TF Keenan, **NG Smith**, and IJ Wright (2018). Acclimation of respiration to warming consistent with optimal plant function. European Geophysical Union General Assembly 2018. Vienna, Austria.

Smith, NG, TF Keenan, H Wang, and IC Prentice (2017). Predicting photosynthetic capacity from first principles. Annual meeting of the Ecological Society of America. Portland, OR, USA.

Smith, NG and JS Dukes (2016). Abiotic and biotic determinants of photosynthetic and respiratory capacity from tropical to high boreal biomes. Annual meeting of the Ecological Society of America. Fort Lauderdale, FL, USA.

Smith, NG (2016). Terrestrial vegetation in the Earth system. Department of Biological Sciences. Purdue University. West Lafayette, IN, USA.

Licht, J, F Shields, H Mclaughlin, and **NG Smith** (2016). Cardboard and chipboard biochar – impact on episodic drought and reversing soil contamination. International Biochar Initiative. Corvallis, OR, USA.

Smith, NG and JS Dukes (2015). Understanding and quantifying foliar temperature acclimation for Earth System Models. Fall meeting of the American Geophysical Union. San Francisco, CA, USA.

Smith, NG and JS Dukes (2015). Understanding and quantifying temperature acclimation of plant carbon exchange across multiple plant functional types. Annual meeting of the Ecological Society of America. Baltimore, MD, USA.

Smith, NG, SL Malyshev, EN Shevliakova, and JS Dukes (2014). Foliar temperature acclimation improves model performance while suppressing global carbon uptake. Annual meeting of the Ecological Society of America. Sacramento, CA, USA.

Selected poster presentations († = student or postdoctoral mentee)

Appell, M†, J Chieppa†, and **NG Smith** (2022). The effects of nutrient addition on carbon and nitrogen cycling in a shortgrass prairie. Texas Tech University Undergraduate Research Conference. Lubbock, TX, USA.

Terrones, J†, E Perkowski†, and **NG Smith** (2022). Soil nitrogen and its effect on microbial symbioses. Texas Tech University Undergraduate Research Conference. Lubbock, TX, USA.

****Awarded 2nd Place in Agriculture Impacts****

Villeda, J† and **NG Smith** (2021). Correlation of plant traits along a fast-slow continuum. Texas Tech University Undergraduate Research Conference. Lubbock, TX, USA.

McNellis, R†, N Van Gestel, RQ Thomas, and **Smith, NG** (2020). Winter cover cropping increases albedo and latent heat flux in the Texas High Plains. Fall meeting of the American Geophysical Union. Virtual (COVID 19; originally San Francisco, CA, USA).

EA Perkowski†, Waring, EF†, and **NG Smith** (2020). Plant carbon costs to acquire nitrogen are determined by interactions between nitrogen acquisition strategy, nitrogen demand, and nitrogen availability. 14th Annual Graduate Climate Conference. Virtual.

EA Perkowski†, Waring, EF†, and **NG Smith** (2020). Short-term return on investment responses are driven by large belowground carbon investments in cotton and soybean seedlings. Ecological Society of America. Virtual (COVID-19; originally Salt Lake City, UT, USA).

Bell, A† and **NG Smith** (2020). Soil salinity has species-specific effects on the growth and nutrient quality of four Texas grasses. Plant Biology 2020. American Society of Plant Biology. Virtual (COVID-19; originally Washington DC, USA).

Bell, A† and **NG Smith** (2020; cancelled due to COVID-19). The effects of soil salinity on the growth and nutrient quality of several native Texas grasses. Texas Tech University Undergraduate Research Conference. Lubbock, TX, USA.

Ortiz, L† and **NG Smith** (2019). Mesquite effects on microhabitat alter community structure but not productivity in short grass prairie. Annual meeting of the Ecological Society of America. Louisville, KY, USA.

Smith, NG, EF Waring†, HG Scott†, TF Keenan, H Wang, and IC Prentice (2019). Using optimization theory to answer big questions in plant ecophysiology. Gordon Research Conference: CO₂ Assimilation in Plants from Genome to Biome. Newry, ME, USA.

Waring, EF† and **NG Smith** (2019). Nitrogen fertilization does not increase leaf-level carbon assimilation. Gordon Research Conference: CO₂ Assimilation in Plants from Genome to Biome. Newry, ME, USA.

Ortiz, L† and **NG Smith** (2019). Mesquite effects on microhabitat alter community structure but not productivity or diversity in short grass prairie. Texas Tech Annual Biological Sciences Symposium. Lubbock, TX, USA.

McNellis, RM† and **NG Smith** (2019). Potential impacts of cover crops on winter albedo: preliminary results and future research. Texas Tech Annual Biological Sciences Symposium. Lubbock, TX, USA.

Scott, HG† and **NG Smith** (2019). Optimal acclimation of C₄ photosynthesis has limited response to temperature CO₂. AAAS Annual Meeting. Washington, DC, USA.

Liu, Z, L Chen, W Yuan, **NG Smith**, and SA Alam (2019). Contrasting long-term influence of energy and water on global gross primary productivity. European Geophysical Union General Assembly 2019. Vienna, Austria.

Smith, NG, TF Keenan, H Wang, and IC Prentice (2017). Photosynthetic capacity regulation is uncoupled from nutrient limitation. Annual meeting of the American Geophysical Union. New Orleans, LA, USA.

Smith, NG, TF Keenan, H Wang, and IC Prentice (2017). Predicting photosynthetic capacity from first principles. 39th New Phytologist Symposia on Plant Traits. Exeter, UK.

Smith, NG and JS Dukes (2016). Abiotic and biotic determinants of photosynthetic and respiratory capacity from tropical to high boreal biomes. Annual meeting of the American Geophysical Union. San Francisco, CA, USA.

Smith, NG and JS Dukes (2016; *Invited*). Plant temperature acclimation in Earth system models: Scaling from the leaf to the canopy to the globe. 2016 International Land Model Benchmarking (ILAMB) Workshop: Comprehensive evaluation of the carbon cycle, hydrology, and terrestrial ecosystem processes in Earth system models. Washington, D.C., USA.

Smith, NG and JS Dukes (2015; *Invited*). Climate models without foliar temperature acclimation underestimate the land carbon sink and (likely) overestimate global warming. Investigadores de Area de Conservacion Guanacaste Open House. Guanacaste, Costa Rica.

Smith, NG, MJ Schuster, and JS Dukes (2013). Mixed-grass prairie responses to extreme precipitation and nitrogen addition. Annual meeting of the Ecological Society of America. Minneapolis, MN, USA.

Smith, NG, SL Malyshev, EN Shevliakova, and JS Dukes (2013). Does temperature acclimation of plant carbon exchange improve land model performance? INTERFACE/CLIMMANI joint meeting. Mikulov, Czech Republic.

Smith, NG (2011). Plant carbon cycle acclimation and its influence in modeling plant responses to climate change. INTERFACE Workshop. Captiva Island, FL, USA.

Organized Symposia

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. Virtual. December 2021.

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. Virtual. December 2020.

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. San Francisco, CA, USA. December 2019.

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. Washington, DC, USA. December 2018.

Land Management in the Earth System: Measurements and Models. Annual meeting of the American Geophysical Union. Washington, DC, USA. December 2018.

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. New Orleans, LA, USA. December 2017.

Land Management in the Earth System: Measurements and Models. Annual meeting of the American Geophysical Union. New Orleans, LA, USA. December 2017.

Ecology in a 400+ ppm World: Which Processes Should Rise to the Forefront of Global Change Science? Organized oral session. Annual Meeting of the Ecological Society of America. Portland, OR, USA. August 2017.

Meeting report published in *Eos*

Creative approaches for addressing ecological uncertainty in Earth System Models. Organized oral session. Annual Meeting of the Ecological Society of America. August 2015. Baltimore, MD, USA.

Meeting report published in *New Phytologist*

Teaching & Mentoring

Lecture Courses as Instructor of Record

- **Biology of Plants (BIOL 1401)**. Texas Tech University, Fall 2017, Fall 2018, Spring 2020, Fall 2020, Spring 2022, Fall 2022
 - Undergraduate, non-major
 - Typical size: 120-140 students
 - Average university evaluation score: 4.6/5 (average n per semester = 73)
- **Physiological Plant Ecology (BIOL 4350)**. Texas Tech University, Spring 2019, Spring 2021
 - Undergraduate majors
 - Typical size: 10-20 students
 - Average university evaluation score: 4.65/5 (average n per semester = 8)
- **Advanced Physiological Plant Ecology (BIOL 6350)**. Texas Tech University, Spring 2019, Spring 2021
 - Graduate students
 - Typical size: 5-10 students
 - Average university evaluation score: 4.8/5 (average n per semester = 6.5)
- **Special Topics: Principles of Terrestrial Ecosystem Ecology (BIOL 4301)**. Texas Tech University, Spring 2019
 - Undergraduate majors
 - Typical size: 15-20 students
 - Average university evaluation score: 5/5 (average n per semester = 6)
- **Special Topics: Advanced Principles of Terrestrial Ecosystem Ecology (BIOL 6301)**. Texas Tech University, Spring 2019

- Graduate students
- Typical size: 5-10 students
- Average university evaluation score: 4.9/5 (average n per semester = 6)
- **Seminar: Plant Physiological Acclimation to Global Change (BIOL 6101).** Texas Tech University, Fall 2022
 - Graduate students
 - Typical size: 5-10 students
 - Average university evaluation score: NA
- **Environmental Conservation and Introduction to Environmental Science (cross-listed across 4 departments).** Purdue University, Spring 2016.
 - Undergraduate majors
 - Typical size: 200+ students

Lab Courses as Instructor of Record

- **Biology of Plants (BIOL 1401).** Texas Tech University, Fall 2017, Fall 2018, Spring 2020, Fall 2020, Spring 2022
 - Undergraduate non-majors
 - Typical size: 5-6 lab sections with 24 students per section
 - Average university evaluation score: 4.4/5 (average n per semester = 73)
- **Undergraduate Research (BIOL 4100 and BIOL 4300).** Texas Tech University, Spring 2018 - Present.
 - Undergraduate majors
 - Typical size: 1-5 students
 - Average university evaluation score: 5/5 (average n per semester = 3)
- **Adv. Topics in Biology: Plant Physiological Theory and Techniques (BIOL 6100).** Texas Tech University, Fall 2021.
 - Graduate majors
 - Typical size: 4 students
 - Average university evaluation score: 5/5 (average n per semester = 5)

Courses as Teaching Assistant

- **Ecology.** Purdue University, Spring 2013 and Fall 2011. Solo-taught teaching assistantship.
- **Intro to Diversity, Ecology, and Behavior.** Purdue University. Fall 2012. Teaching assistant.
- **Intro to Ecology and Evolution.** Purdue University. Spring 2012. Teaching assistant.
- **Boot Camp for Biology Students.** Purdue University. Fall 2008-Spring 2010. Solo-taught teaching assistant.

Postdocs mentored as faculty advisor

- Brad Posch. Texas Tech University. 2022 – Present.
- Jeff Chieppa. Texas Tech University. 2021 – Present.

- Elizabeth Waring. Texas Tech University. 2017 – 2019. Currently an Assistant Professor at Northeastern State University.

Graduate students mentored as major advisor

- Ezinwanne Ezikannagh (Ph.D. – Biological Sciences). Texas Tech University. 2021 – Present.
- Evan Perkowski (Ph.D. – Biological Sciences). Texas Tech University. 2018 – Present.
- Risa McNellis (M.S. – Biological Sciences). Texas Tech University. 2018 – 2020. Graduated with M.S. in Biological Sciences in 2020.
- Helen Scott (M.S. – Biotechnology). Texas Tech University. 2018 – 2019. Graduated with M.S. in Biotechnology in 2019.

Graduate students mentored as committee member

- Andy Parks (M.S. – Biological Sciences). Texas Tech University. 2022 – Present.
- Adriana Llanas (P.S.M). Texas Tech University. 2021.
- Taiwo Osoko (M.S. – Biological Sciences). Texas Tech University. 2021 – Present.
- Sri Jyotsna Kancharlapalli (Ph.D. – Biological Sciences). Texas Tech University. 2021 – Present.
- Peter Eludini (Ph.D. – Biological Sciences). Texas Tech University. 2021 – Present.
- Azaj Mahmud (M.S. – Biological Sciences). Texas Tech University. 2021 – Present.
- Pawan Devkota (M.S. – Biological Sciences). Texas Tech University. 2021 – 2022.
- Caroline Schuster (Ph.D. – Biological Sciences). Texas Tech University. 2021.
- Amandeep Kaur (Ph.D. – Biological Sciences). Texas Tech University. 2021 – Present.
- Jordan Brown (Ph.D. – Biological Sciences). Texas Tech University. 2019 – Present.
- Shiva Aghdam (Ph.D. – Biological Sciences). Texas Tech University. 2019 – Present.
- Ezinne Osuji (Ph.D. – Biological Sciences). Texas Tech University. 2019 – Present.
- Nan Hu (Ph.D. – Biological Sciences). Texas Tech University. 2019 – Present.
- Minghao Guo (Ph.D. – Biological Sciences). Texas Tech University. 2019 – Present.
- Juan García-Cancel (Ph.D. – Natural Resources Management). Texas Tech University. 2018 – Present.
- Xiulin Gao (Ph.D. – Biological Sciences). Texas Tech University. 2017 – 2021.
- Morgan Long (M.S. – Biological Sciences). Texas Tech University. 2019 – 2020.
- Haley Hale (M.S. – Biological Sciences, non-thesis). Texas Tech University. 2017 – 2018.

Graduate student dean's representative

- Lale Asik (Ph.D. – Mathematics). Texas Tech University. 2020.
- Julie Gerdes (Ph.D. – Technical Communication and Rhetoric). Texas Tech University. 2019.

Undergraduates mentored as faculty advisor

- Garrison Garza, Texas Tech University, 2021 - Present. Student technician. Funding: NSF CAREER.
- Hannah German, Texas Tech University, 2021 - Present. Student technician. Funding: NSF CAREER.

- Malaika Shinwari, Texas Tech University, 2021. Student in BIOL 4100. Funding: NSF CAREER.
- Daniel Paris, Texas Tech University, 2021. Student in BIOL 4100. Funding: NSF CAREER.
- Destiny Nwoko, Texas Tech University, 2021. Student in BIOL 4100. Funding: NSF CAREER.
- Gwedolyn Wagner, Texas Tech University, 2021 - Present. Student technician. Funding: NSF CAREER and TTU Pi².
- Morgan Appell. Texas Tech University. 2021 - Present. Honors College Scholar. Funding: NSF CAREER and TTU Honors College.
- Joseph Terrones. Texas Tech University. 2021 - Present. Honors College Scholar. Funding: NSF CAREER.
- Avery Schoenherr. Texas Tech University. 2021 - Present. Student technician. Funding: startup and NSF CAREER.
- Dreyvan Avizenis, Texas Tech University, 2020 - 2021. Student in BIOL 4100 and 4300. Funding: startup.
- Omongidale Owobu, Texas Tech University, 2020. Student in BIOL 4100. Funding: startup.
- Mohammed Uddin, Texas Tech University, 2020. Student in BIOL 4100. Funding: startup.
- Christine Vanginault. Southwestern University. 2020 - Present. Student technician. Funding: startup and Livable Futures grant.
- Jose Villeda, Texas Tech University, 2020 - 2021.. Honors College Scholar and student in BIOL 4300. Funding: startup and Livable Futures grant.
- McKenna Whaley, Texas Tech University, 2020 - 2021. Student in BIOL 4100 and 4300. Funding: startup.
- Bryan Vasquez, Texas Tech University, 2020 - 2021. Student in BIOL 4100 and 4300. Funding: startup.
- Taylee Reyes, Texas Tech University, 2020. Student in BIOL 4100. Funding: startup.
- Abigail Bell, Texas Tech University, 2019 - 2020. Honors College Scholar. Funding: Tri-Beta, startup, and TTU Honors College.
- Mitej Dongarkar. Texas Tech University. 2019 - 2020. Student technician. Funding: startup.
- Jorge Ochoa. Texas Tech University. 2018 - 2021. Student technician. Funding: startup and Livable Futures grant.
- Bryn Rice. Texas Tech University. 2019. Student in BIOL 4100. Funding: startup.
- Tyler Do. Texas Tech University. 2019. Student in BIOL 4300. Funding: startup.
- Zachary Bailey. Texas Tech University. 2018 - 2019. Honors College Scholar. Funding: Honors College and startup.
- Leah Ortiz. Texas Tech University. 2018 - 2019. Student technician. Funding: startup.
- Angel Barron. Texas Tech University. 2018 - 2019. Student technician. Funding: startup.
- Amanda Pinal. Texas Tech University. 2018. Student in BIOL 4100. Funding: startup.
- Kobe Young. Texas Tech University. 2018. Student technician. Funding: startup.
- Dave Baychoo. Texas Tech University. 2018. Student technician. Funding: startup.
- Mahum Haque. Texas Tech University. 2018. Student in BIOL 4300. Funding: startup.

- Austin Cooper. Texas Tech University. 2018. Student in BIOL 4300. Funding: startup.
- Joshua Gutierrez. Texas Tech University. 2018. Student technician. Funding: startup.
- Joe Hinnant. Texas Tech University. 2017. Student technician. Funding: startup.

Undergraduates mentored as graduate advisor

- Kyle Puls. Purdue University. 2014-2015.
- John Park. Purdue University. 2014-2015.
- Ryan Rafalski. Purdue University. 2013-2015.
- Kylie Jungles. Purdue University. 2014.
- Chen Shen. Purdue University. 2013.
- Siying Long. Purdue University. 2012.
- Ben Ramsey. UMass-Boston. 2011.

Visiting scholars mentored as faculty advisor

- Dinah Borus (International Potato Center, Kenya). USDA Borlaug Fellow. 2019-2020.
- Ricky Kong (University of Western Ontario, Canada). NSERC CGS-MSFSS Scholar. 2019.

Professional Service

Author, 5th National Climate Assessment, 2021 – Present, scheduled release: 2023
 Associate Editor, *Frontiers in Forests and Global Change*, 2018 – Present
 Steering committee, USGS Powell Center working group on C₄ photosynthesis, 2020 – Present
 Member, National Ecological Observatory Network (NEON) Foliar Sampling Technical Working Group, 2018 – 2021

Departmental Service

Member, Diversity and Inclusivity Committee, Texas Tech University, 2020 – Present
 Member, Non-Majors Biology/Zoology Curriculum Committee, Texas Tech University, 2020 – Present
 Member, Pedagogy Search Committee, Texas Tech University, 2020 – 2021
 Member, Seminar Committee, Texas Tech University, 2018 – 2020
 Member, Plant Biology Curriculum Committee, Texas Tech University, 2018 – 2020
 Member, Plant Growth Chamber Coordinating Group, Texas Tech University, 2018 – 2020

Grant Review Panels

National Science Foundation – Division of Integrative Organismal Systems, June 2019
 National Science Foundation – Division of Environmental Biology, October 2021

Grant External Review

National Science Foundation – Division of Environmental Biology, Core program, September 2017
 National Science Foundation – Division of Environmental Biology, Core program, January 2021
 National Science Foundation – Division of Environmental Biology, CAREER program, August 2021

Publication Review

Agriculture and Forest Meteorology, Ecological Modelling, Ecological Monographs, Environmental Pollution, Global Change Biology, Journal of Advances in Modeling the Earth System (JAMES), Journal of Experimental Botany, Journal of Geophysical Research –Atmospheres, Journal of Geophysical Research – Biogeosciences, Geoscientific Model Development, Journal of Geophysical Research-Biogeosciences, Journal of Plant Ecology, Nature Geoscience, Nature Communications, New Phytologist, Oecologia, Photosynthesis Research, Plant, Cell & Environment, PLoS One, Science Advances, Texas Journal of Science, Tree Physiology, Trends in Plant Science

Other reviews

Expert Reviewer, Intergovernmental Panel on Climate Sixth Report (AR6)

International Networks

Nutrient Network (site PI; lbb.us)

Professional Memberships

Ecological Society of America
American Geophysical Union

Institutional Affiliations

Texas Tech University Climate Center
Texas Tech University Literature, Social Justice, and Environment Program
Texas Tech University Creating Livable Futures Program
Purdue Climate Change Research Center