Nicholas G. Smith

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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

Awards and Honors

Open Access Data Award (2019). Texas Tech University Libraries.
Plant, Cell, & Environment Postdoctoral Award (2017). Ecological Society of America.
Outstanding Graduate Student (2014). Purdue University Department of Biological Sciences.
NASA Earth and Space Science Fellowship (2013). Natl. Aeronautics and Space Admin.
PCCRC Graduate Fellowship (2013). Purdue Climate Change Research Center.
NSF GRFP-Honorable Mention (2012). Natl. Science Foundation.
Lindsey Fellowship in Ecology (2011). Purdue University Department of Biological Sciences.
Ross Graduate Fellowship (2010). Purdue University.

Publication Summary as of October 12, 2021 (statistics from Google Scholar)

First publication: 2013
Peer-reviewed journal articles and book chapters: 47
Total journal article citations: 1,753
h-index: 16, i-10 index: 20

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

Keenan, TF, M De Kauwe, BE Medlyn, IC Prentice, BD Stocker, **NG Smith**, C Térrer, H Wang, Y Zhang, and S Zhou (Accepted). A constraint on historic growth in global photosynthesis due to rising CO_2. *Nature* (JIF: 50.0).

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, AS Grandy (In press). 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).

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.

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.

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.

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.

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.

Smith, NG* and TF Keenan (2020). Mechanisms underlying leaf photosynthetic acclimation to warming and elevated CO_2 as inferred from least-cost optimality theory. *Global Change Biology* (JIF: 10.9) 26(9): 5202-5216.

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.

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)****Ecology Letters Top Downloaded Paper 2018-2019 (top 10%)****

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.

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.

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.

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.

Smith, NG*, and JS Dukes (2013). Plant respiration and photosynthesis in global scale models: incorporating acclimation to temperature and CO_2. *Global Change Biology* (JIF: 10.9) 19(1), 45-63. ****Thomson Reuters "Highly cited paper" (top 1% in Environment/Ecology)****

External Funding Summary as of October 12, 2021 (all dollar figures to TTU; full details below)

Active and recommended external funding: $2,060,056
Previous external funding: $140,286
Total TTU external funding (2017-present): $2,200,342

Select Current and Recent Grants

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 ($705,008 to TTU)
    - Direct amount to TTU: $640,917
- Dates: 01/2021– 12/2025
- Percent contribution: 100% of TTU amount

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%

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%

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 – 04/2021 (following NCE)
- Percent contribution: 99%

Select Professional Activity

Lecture Courses as Instructor of Record

Biology of Plants (BIOL 1401). Texas Tech University, Spring/Fall even years, Undergraduate, non-major, 120-140 students, lecture + lab, new prep

Physiological Plant Ecology (BIOL 4350/6350). Texas Tech University, Spring odd years, undergraduate majors and graduate students, 15-30 students, lecture, new prep

Principles of Terrestrial Ecosystem Ecology (BIOL 4301/6301). Texas Tech University, Fall odd years, undergraduate majors and graduate students, 15-30 students, lecture, new prep

Plant physiological theory and techniques (BIOL 6100). Texas Tech University, Fall odd years, graduate students, 5-10 students, lab, new prep

Mentoring Summary (2017-2021 at TTU)

Postdocs: 3, PhD students: 2, MS students: 2, graduate committees: 16, undergraduate researchers: 30

Professional Service Highlights

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 C_4 photosynthesis, 2020 – Present

Member, National Ecological Observatory Network (NEON) Foliar Sampling Technical Working Group, 2018 – 2021

Organized Symposia

Vegetation canopies: physiology, structure, function. Annual meeting of the American Geophysical Union. 2017-2021.

Land Management in the Earth System: Measurements and Models. Annual meeting of the American Geophysical Union. 2017-2018.

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. 2017.

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