

ROBERT J. GRIFFIN-NOLAN

Curriculum vitae

Department of Biological Sciences
California State University
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RESEARCH INTERESTS

Plant physiology | Ecosystem ecology | Drought | Global change | Plant traits

EDUCATION

2019 **Ph.D.**, Ecology, Colorado State University
2013 **B.S.**, Biology, Ithaca College

WORK EXPERIENCE

2023 – Present Assistant Professor, **California State University, Chico**
2021 – 2023 Postdoctoral Fellow, **Santa Clara University**
2019 – 2021 Postdoctoral Fellow, **Syracuse University**
2014 – 2019 Graduate Research Assistant, **Colorado State University**
2013 – 2014 Research Technician, **Cornell University**
2010 – 2013 Research Technician, **Ithaca College**

PEER-REVIEWED PUBLICATIONS

35. **Griffin-Nolan RJ**, Bensaddek L, Decocq G, Hikosaka H, Kichey T, LeVonne J, Mishio M, Fridley J. (2024) Away-range shifts in leaf function of a global invader: a case of resource reallocation? *Biological Invasions* (accepted, in-press)
34. Sandel B and **Griffin-Nolan RJ** (2024). Idiosyncrasy and predictability in intraspecific trait-climate relationships of grasses. *Ecosphere* (accepted, in-press)
33. Song L, **Griffin-Nolan RJ**, Muraina TO, Chen J, Te N, Shi Y, Whitney KD, Zhang B, Yu Q, Smith MD, Zuo X, Knapp AK, Han X, Collins SC, Luo, W. (2024). Grassland sensitivity to drought is related to functional composition across East Asia and North America. *Ecology*, 105(2): e4220. <https://doi.org/10.1002/ecy.4220e4220>

32. Knapp AK, Condon KV, Folks CC, Sturchio MA, **Griffin-Nolan RJ**, Kannenberg SA, Gill AS, Hajek, OL, Siggers JA, Smith MD (2024). Field experiments have enhanced our understanding of drought impacts on terrestrial ecosystems—But where do we go from here? *Functional Ecology*, 38, 76–97. <https://doi.org/10.1111/1365-2435.14460>
31. Mount HE, Smith MD, Knapp AK, Griffin-Nolan RJ, Collins SL, Atkins DH, Stears AE, Laughlin DC. (2023). Drought-tolerant grassland species are generally more resistant to competition. *Journal of Ecology*, 00, 1–11. <https://doi.org/10.1111/1365-2745.14243>
30. Luo W, Muraina TO, **Griffin-Nolan RJ**, Te N, Qian J, Yu Q, Zuo X, Wang Z, Knapp AK, Smith MD, Han X, Collins SL. (2023). High below-ground bud abundance increases ecosystem recovery from drought across arid and semiarid grasslands. *Journal of Ecology*, 111, 2038–2048. <https://doi.org/10.1111/1365-2745.14160>
29. **Griffin-Nolan RJ** & Sandel B. (2023) Global intraspecific trait–climate relationships for grasses are linked to a species’ typical form and function. *Ecography*, e06586 <https://doi.org/10.1111/ecog.06586>
28. **Griffin-Nolan RJ** & Sandel B. (2023) Grass trait–abundance relationships and the role of the functional composition of the neighboring community. *Journal of Vegetation Science*, 34, e13181. Available from: <https://doi.org/10.1111/jvs.13181>
27. Luo W, Ma W, Song L, Te N, Chen J, Muraina TO, Wilkins K, **Griffin-Nolan RJ**, Ma T, Qian J, Xu C, Yu Q, Wang Z, Han X, & Collins SL. (2023). Compensatory dynamics drive grassland recovery from drought. *Journal of Ecology*, 00, 1– 11. <https://doi.org/10.1111/1365-2745.14096>
26. Aspinwall MJ, Blackman CJ, Maier C, Tjoelker MG, Rymer PD, Creek D, Chieppa J, **Griffin-Nolan RJ**, & Tissue DT. (2023). Aridity drives clinal patterns in leaf traits and responsiveness to precipitation in a broadly distributed Australian tree species. *Plant–Environment Interactions*, 00, 1– 16. <https://doi.org/10.1002/pei3.10102>
25. **Griffin-Nolan RJ**, Chieppa J, Knapp AK, Nielsen U, Tissue DT. (2023). Coordination of hydraulic and morphological traits across dominant grasses in eastern Australia. *Functional Ecology*, 37, 1126– 1139. <https://doi.org/10.1111/1365-2435.14283>
24. **Griffin-Nolan RJ**, Felton AJ, Slette IJ, Smith MD, Knapp AK. (2023). Traits that distinguish dominant species across aridity gradients differ from those that respond to soil moisture. *Oecologia*, 1-12. <https://doi.org/10.1007/s00442-023-05315-y>
23. Luo W, **Griffin-Nolan RJ**, Song L, Te N, Chen J, Shi Y, Muraina TO, Wang Z, Smith MD, Yu Q, Knapp AK, Han X, Collins SL. (2022). Interspecific and intraspecific trait variability differentially affect community-weighted trait responses to and recovery from long-term drought. *Functional Ecology*, 00, 1– 9. <https://doi.org/10.1111/1365-2435.14239>

22. Luo W, Muraina TO, **Griffin-Nolan RJ**, Ma W, Song L, Fu W, Yu Q, Knapp AK, Wang Z, Han X, Collins SL. (2022). Responses of a semiarid grassland to recurrent drought are linked to community functional composition. *Ecology*, e3920.
<https://doi.org/10.1002/ecy.3920>
21. Luo W, **Griffin-Nolan RJ**, Felton AJ, Yu Q, Wang H, Zhang H, Wang Z, Han X, Collins SL, Knapp AK. (2022). Drought has inconsistent effects on seed trait composition despite their strong association with ecosystem drought sensitivity. *Functional Ecology*, 36, 2690–2700 <https://doi.org/10.1111/1365-2435.14165>
20. Mao W, Sun Z, Forrester EJ, **Griffin-Nolan RJ**, Chen A, Smith MD. 2022. Using local and regional trait hypervolumes to study the effects of environmental factors on community assembly. *Ecosphere*, 13(10): e4253, <https://doi.org/10.1002/ecs2.4253>
19. Qian J, Guo Z, Muraina TO, Te N, **Griffin-Nolan RJ**, Song L, Xu C, Yu Q, Zhang Z, Luo W. 2022. Legacy effects of a multi-year extreme drought on belowground bud banks in rhizomatous vs bunchgrass-dominated grasslands. *Oecologia*, 198, 763–771, <https://doi.org/10.1007/s00442-022-05133-8>
18. Song L, Lu W, **Griffin-Nolan RJ**, Ma W, Cai J, Zuo X, Yu Q, Hartmann H, Li MH, Smith MD, Collins, SC, Knapp AK, Wang Z, Han X. 2022. Differential responses of community nonstructural carbohydrates to drought manipulations along a natural aridity gradient in grasslands. *Science of the Total Environment*, 153589, <https://doi.org/10.1016/j.scitotenv.2022.153589>
17. Crump M, Brown C, **Griffin-Nolan RJ**, Angeloni L, Lemoine N, Seymoure B. 2021. Effects of low-level artificial light at night (ALAN) on Kentucky bluegrass and an introduced herbivore. *Frontiers in Ecology and the Environment*, 9, 612, <https://doi.org/10.3389/fevo.2021.732959>
16. **Griffin-Nolan RJ**, Slette IJ, Knapp AK. 2021. Deconstructing precipitation variability: rainfall event size and timing uniquely alter ecosystem dynamics. *Journal of Ecology*, 109, 3356–3369, <https://doi.org/10.1111/1365-2745.13724>
15. Luo W, **Griffin-Nolan RJ**, Ma W, Liu B, Zuo X, Yu Q, Luo Y, Mariotte P, Smith MD, Collins SL, Knapp AK, Wang Z, Han X. 2021. Plant traits and soil fertility mediate productivity losses under extreme drought in C3 grasslands. *Ecology*, <https://doi.org/10.1002/ecy.3465>
14. **Griffin-Nolan RJ**, Mohan Babu N, Araldi-Brondolo S, Ebert A, Levonne J, Lumbsen-Pinto JI, Roden H, Stark J, Tourville J, Becklin K, Drake JE, Frank DA, Lamit J, Fridley JD. 2021. Friend or foe? The role of biotic agents in drought-induced plant mortality. *Plant Ecology*, 222(5), 537–548, <https://doi.org/10.1007/s11258-021-01126-4>
13. Carroll CJW, Slette IJ, **Griffin-Nolan RJ**, Baur LE, Hoffman AM, Denton EM, Gray JE, Post AK, Johnston MK, Yu Q, Collins SL, Luo Y, Smith MD, Knapp AK. 2021. Is a

Drought a Drought in Grasslands? Productivity Responses to Different Types of Drought. *Oecologia*, <https://doi.org/10.1007/s00442-020-04793-8>

12. Knapp AK, Chen A, **Griffin-Nolan RJ**, Baur LE, Carroll CJW, Gray JE, Hoffman AM, Li X, Post AK, Slette IJ, Collins SL, Luo Y, Smith MD. 2020. Resolving the Dust Bowl paradox of grassland responses to extreme drought. *PNAS*, 117(36), 22249-22255. <https://doi.org/10.1073/pnas.1922030117>
11. Luo W, Zuo X, **Griffin-Nolan RJ**, Xu C, Sardans J, Yu Q, Wang Z, Han X, Peñuelas J. 2020. Chronic and intense droughts differentially influence grassland carbon-nutrient dynamics along a natural aridity gradient. *Plant and Soil*. <https://doi.org/10.1007/s11104-020-04571-8>
10. **Griffin-Nolan RJ**, Blumenthal DM, Collins SL, Farkas TE, Hoffman AM, Mueller KE, Ocheltree TW, Smith MD, Whitney KD, Knapp AK. 2019. Shifts in plant functional composition following long-term drought in grasslands. *Journal of Ecology*, 107(5), 2133-2148. <https://doi.org/10.1111/1365-2745.13252>
9. Luo W, Zuo X, **Griffin-Nolan RJ**, Xu C, Ma W, Song L, Helsen K, Lin Y, Cai J, Yu Q, Wang Z, Smith MD, Han X, Knapp AK. 2019. Long term experimental drought alters community plant trait variation, not trait means, across three semiarid grasslands. *Plant and Soil*, 442 (1-2), 343-353. <https://doi.org/10.1007/s11104-019-04176-w>
8. **Griffin-Nolan RJ**, Ocheltree TW, Mueller KE, Blumenthal DM, Kray JA, Knapp AK. 2019. Extending the osmometer method for assessing drought tolerance to herbaceous species. *Oecologia*, 189(2), 353-363. <https://doi.org/10.1007/s00442-019-04336-w>
7. **Griffin-Nolan RJ**, *Zelehowsky A, Hamilton JG, Melcher PJ. 2018. Green light drives photosynthesis in mosses, *Journal of Bryology*, 40(4), 342-349. <https://doi.org/10.1080/03736687.2018.1516434>
6. Lemoine NP, **Griffin-Nolan RJ**, *Lock AD, Knapp AK. 2018. Drought timing, not previous drought exposure, determines sensitivity of two shortgrass species to water stress. *Oecologia*, 188(4), 965-975. <https://doi.org/10.1007/s00442-018-4265-5>
5. Knapp AK, Carroll CJ, **Griffin-Nolan RJ**, Slette IJ, Chaves FA, Baur L, Felton AJ, Gray J, Hoffman AM, Lemoine NP, Mao W, Post AK, Smith MD. 2018. A reality check for climate change experiments: do they reflect the real world?. *Ecology*, 99, 2145–2151. <https://doi.org/10.1002/ecy.2474>
4. **Griffin-Nolan RJ**, Bushey J, Carroll CJW, Challis A, Chieppa J, Garbowski M, Hoffman A, Post AK, Slette, IJ, Spitzer D, Zambonini D, Ocheltree TW, Tissue D, Knapp AK. 2018. Trait selection and community weighting are key to understanding ecosystem responses to changing precipitation. *Functional Ecology*, 32, 1746–1756. <https://doi.org/10.1111/1365-2435.13135>

3. **Griffin-Nolan RJ**, Denton EM, Johnston M, Carroll CJW, Collins SL, Smith MD, Knapp AK. 2018. Legacy effects of a regional drought on aboveground net primary production in six central US grasslands. *Plant Ecology*, 219(5), 505-515. <https://doi.org/10.1007/s11258-018-0813-7>
2. Knapp AK, Avolio ML, Beier C, Carroll CJW, Collins SL, Dukes JS, Fraser LH, **Griffin-Nolan RJ**, Hoover DL, Jentsch A, Loik ME, Phillips RP, Post AK, Sala OE, Slette IJ, Yahdjian, L Smith MD. 2017. Pushing precipitation to the extremes in distributed experiments: recommendations for simulating wet and dry years. *Global Change Biology*, 23(5), 1774-1782. <https://doi.org/10.1111/gcb.13504>
1. Cockrell DM, **Griffin-Nolan RJ**, Rand TA, Altilmisan N, Ode PJ, Peairs F. 2017. Host Plants of the Wheat Stem Sawfly (Hymenoptera: Cephidae). *Environmental Entomology*, 46(4), 847-854. <https://doi.org/10.1093/ee/nvx104>

GRANTS AND FELLOWSHIPS

2023 – current	UC Climate Action seed grant: “Establishing drought resilient grassland restoration networks in California” (co-PI, \$1,498,140)
2021	Interdisciplinary Seminar Grant, Syracuse University: “NYEON: A workshop to develop an ecosystem observatory network for NY State” (co-PI, \$6,507)
2018	Rangeland Ecology Travel Award, Ecological Society of America (\$400)
2017 – 2018	Sustainability Leadership Fellow, Colorado State University
2017	Visiting Research Fellow, Hawkesbury Institute for the Environment (\$6,000)
2016 – 2017	Vice President for Research Fellow, Colorado State University (\$4,000)
2014 – 2018	Departmental Research Grants, Colorado State University (\$5,300)
2014 – 2018	Departmental Travel Awards, Colorado State University (\$1,450)

PRESENTATIONS

* = Award-winning presentation

Invited seminars

- 2024 Grassland sensitivity to drought: the role of plant functional traits. University of California, Davis, CA.
- 2023 Drought resilient rangelands and eco-voltaics. Agricultural Research Institute (ARI) annual PI meeting, Sacramento, CA.
- 2023* Exploring local and global patterns of intraspecific trait variation in grasses. Colorado State University, Fort Collins, Colorado (Distinguished Alumni Seminar)
- 2022 Harnessing Kew’s GrassBase to model intraspecific trait variability globally. Kew Royal Botanical Gardens, London, UK.
- 2022 Global intraspecific trait-climate relationships for grasses are linked to mean species traits. University of California, Berkeley, California

- 2021 Differential sensitivity of dryland ecosystems to drought and rainfall variability. University of California Berkeley, Berkeley, California
- 2019 Exploring mechanisms of ecosystem sensitivity to extreme drought. Ithaca College, Ithaca, NY
- 2019 Grassland sensitivity to extreme drought: assessing the role of community functional composition. Syracuse University, Syracuse, New York
- 2019 Causes and consequences of shifts in community functional composition following long-term drought in grasslands. Tohoku University, Sendai, Japan

Oral presentations (1st author only)

- 2023 Growth allocation tradeoffs for grasses worldwide. Ecological Society of America annual meeting. Portland, OR
- 2022 Global intraspecific trait-climate relationships for grasses are linked to mean species traits. Ecological Society of America annual meeting. Montréal, Quebec, Canada.
- 2022 Global intraspecific trait-climate relationships for grasses. Nordic Society OIKOS conference. Aarhus, Denmark.
- 2021 Is photosynthetic performance of a common plant invader linked to leaf nitrogen allocation patterns? A test of the pre-adaptation hypothesis. Ecological Society of America annual meeting. Long Beach, CA.
- 2018 Functional trait diversity explains grassland sensitivity to drought. American Geophysical Union annual meeting. Washington, D.C.
- 2018 Hydraulic trait diversity explains differential sensitivity of grassland communities to extreme drought (ignite-style presentation). Ecological Society of America annual meeting. New Orleans, LA.
- 2018 Evenness in event distribution as a hidden treatment in rainfall manipulation experiments. Ecological Society of America annual meeting. New Orleans, LA.
- 2016 Does plant trait diversity explain variation in drought sensitivity in Central US grasslands. International Long-Term Ecological Research Open Scientists Meeting. Kruger, South Africa.
- 2016 Using plant traits to explain ecosystem responses to extreme drought in North American grasslands. Major International Joint Project meeting: The response of grassland ecosystems to climate extremes at local to regional scales: comparing grassland networks between China and USA. Erguna, China.
- 2016* When grasses surrender to drought: A physiological trait-based approach for understanding drought sensitivity in water-limited ecosystems. Front Range Student Ecology Symposium. Fort Collins, CO.

Poster presentations (1st author only)

- 2021 Deconstructing precipitation variability: rainfall event size and timing uniquely alter ecosystem dynamics. American Geophysical Union Annual Meeting. New Orleans, LA.
- 2018* Extreme drought increases plant functional diversity in grasslands. Graduate Student Showcase. Fort Collins, CO.
- 2017* Functional diversity of Hydraulic traits explains grassland drought sensitivity. Dupont Pioneer Plant Science Symposium: Drought Tolerance in Agricultural and Natural Systems. Fort Collins, CO.

- 2017 Does plant trait diversity explain variation in drought sensitivity in central US grasslands. Ecological Society of America annual meeting. Portland, OR.
- 2016 Unexpected drought legacy effects in six North American grasslands. American Geophysical Union Annual Meeting. San Francisco, CA.
- 2015* Plant drought tolerance predicts grassland sensitivity to extreme drought. Colorado State University Graduate Showcase. Fort Collins, CO.
- 2015 Key drought tolerant traits of several dominant flora in a tallgrass prairie. LTER All Scientists Meeting. Estes Park, CO.
- 2015* Variability in legacy effects of drought in North American grasslands. Front Range Student Ecology Symposium. Fort Collins, CO.
- 2014 Investigating the role chloroplast movements play in non-photochemical quenching in *Arabidopsis thaliana*. Northeast section of the American Society of Plant Biologists conference. Kingston, RI.
- 2013* The physiological responses of moss to green light. The Botanical Society of America Conference. New Orleans, LA.
- 2012* The role of green light in photosynthesis of bryophytes and higher plants. The Botanical Society of America Conference. Columbus, OH.

TEACHING EXPERIENCE

California State University, Chico

- Foundations of Ecology (lead instructor) (Fall 2023)
 Plant Physiology (lead instructor) (Spring 2024)
 Fundamentals of Ecology Lab (lead instructor) (Fall 2023)

Syracuse University

- Drought Ecology and Climate Change (lead instructor) (Summer 2020) [online]
 Climate Driven Plant Mortality (lead instructor) (Spring 2020) [hybrid]

Colorado State University

- Ecosystem Ecology (GTA) (Fall 2018)
 Biology of Organisms (GTA) (Spring 2018)
 Basic Concepts of Plant Life (GTA) (Fall 2017)
 Principles of Plant Biology (GTA) (Fall 2014, 2015, Spring 2019)
 Community Ecology (guest lecture) (Spring 2018)
 Plant Ecology (guest lecture) (Spring 2019)

Student Mentorship

- Anna Krause, Chico State (graduate student, 2024 – current)
 Natalie Braun, Chico State (undergraduate student, 2024 – current)
 Lucas Seeley, Santa Clara University (undergraduate student, 2023)
 Julie Levonne, Syracuse University (graduate student, 2019 – 2021)
 Victoria Klimkowski, Colorado State University (NSF REU summer fellow, 2014)

SERVICE TO PROFESSION

Service

- 2023-Present Participant in the Universal Design for Learning (UDL) faculty learning community, CSU-Chico
- 2023-Present Participant in the Course-based Undergraduate Research Experiences and Entrepreneurial mindset (CURE-E) faculty learning community, CSU-Chico
- 2023-Present Handling Editor for *Oecologia*
- 2022 Dissertation examiner for University of Tasmania, Australia
- 2022 Participant in Inclusive Teaching working group, Santa Clara University
- 2021-2023 Associate Editor for *Plant Ecology*
- 2021-Present Associate Faculty member of Faculty of 1000 (Ecosystem Ecology Section)
- 2021 Judge for Syracuse Arts & Sciences Undergraduate Research Festival
- 2020 Grant proposal reviewer for NSF Division of Environmental Biology
- 2020 Diversity & Inclusion retreat participant, Syracuse University
- 2019 Panelist for Ithaca College Biology career capstone course
- 2019 Panelist for the School of Global Environmental Sustainability 10th Anniversary Symposium, Fort Collins, CO.
- 2018 Grant proposal reviewer for ecology graduate student grant submissions (CSU)
- 2016-2018 Science Judge for Colorado Middle School Regional Science Bowl
- 2016 Science Judge for Graduate Student Showcase, Fort Collins, CO
- 2016 Attendee Phys-Fest 2016, LTER Konza Prairie Biological Research Station
- 2015-2016 Event organizer for Front Range Student Ecology Symposium, Fort Collins, CO

Professional memberships

- Ecological Society of America (ESA)
- American Geophysical Union (AGU)

Journal reviewer

Science | Nature Communications | New Phytologist | Plant Physiology | Ecology Letters | Plant Cell and Environment | Functional Ecology | Nature Communications Biology | Global Ecology and Biogeography | Journal of Plant Ecology | Environmental and Experimental Botany | Ecosphere | Ecosystems | PeerJ | AoB Plants | Ecohydrology | Ecography | Oecologia | Ecology | Journal of Ecology | Plant and Soil | Physiologia Plantarum