

Curriculum Vitae - Kerry M. Byrne

Environmental Science and Management

California State Polytechnic University, Humboldt, Arcata, CA 95521

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EDUCATION

Ph.D., Ecology - *Colorado State University* 2007 – 2012
B.S., Environmental Biology and Management - *University of California, Davis* 2000 – 2004

PROFESSIONAL APPOINTMENTS

Associate Professor - Env. Science and Management, *Cal Poly Humboldt* 2022 – Pres
Assistant Professor - Env. Science and Management, *Cal Poly Humboldt* 2017 – 2022
Assistant Professor - Natural Sciences, *Oregon Institute of Technology* 2013 – 2017
Postdoctoral Research Fellow - Plant Sciences, *University of California, Davis* 2012 – 2013

LEAVE

Sabbatical leave: Aug 2023 – May 2024, Boise State University, funded by Western SARE sabbatical research grant

Maternity leave: Jan – May 2018, Jan – May 2020 (40 % reduction in university responsibilities for each leave)

HONORS AND AWARDS

President Alistair McCrone Promising Faculty Scholar Award, *Cal Poly Humboldt* 2019
Editor's Choice Award for publication in *Journal of Ecology*, Issue 6 2011

PUBLICATIONS

Undergraduate student^u; Graduate student^g

15. Shi, B. M. Delgado-Baquerizo, A. K. Knapp, M. D. Smith, S. C. Reed, B. Osborne, Y. Carrillo, F. T. Maestre, Y. Zhu, A. Chen, K. Wilkins, M. C. Holdrege, A. Kulmatiski, C. Picon-Cochard, C. Roscher, S. Power, **K. M. Byrne**, and others. Aridity drives the response of soil total and particulate organic carbon to drought in temperate grasslands and shrublands. Accepted. *Science Advances*.
14. M. D. Smith, K. Wilkins, and Drought-Net (including **K.M. Byrne**). 2024. Extreme drought impacts have been underestimated in grasslands and shrublands globally. *Proceedings of the National Academy of Science* **121**: e2309881120.
13. Nunes, A. M.^g and **K. M. Byrne**. 2022. Drought and shrub cover differentially affect seed bank composition within two sagebrush steppe communities. *Journal of Arid Environments* **202**: 104752.
12. Kelly, S.^u, C. McKinney^u, and **K. M. Byrne**. 2022. Innovation in Restoration: Estimating Seed Counts Using a Photography App. *Ecological Restoration* **40**: 29-32.
11. **Byrne, K. M.** 2021. Technical Note: A Rapid Method to Estimate Root Production in Grasslands, Shrublands, and Forests. *Rangeland Ecology and Management* **76**: 74-77.

10. Wilcox, K. R., Z. Shi, L. A. Gherardi, N. P. Lemoine, S. E. Koerner, D. L. Hoover, E. Bork, **K. M. Byrne**, and others. 2017. Asymmetric responses of primary productivity to climate extremes: a synthesis of grassland precipitation manipulation experiments. *Global Change Biology* **23**: 4376 - 4385.
9. **Byrne, K. M.**, P. B. Adler, and W. K. Lauenroth. 2017. Contrasting effects of precipitation manipulations on plant communities within the Great Plains, U.S.A. *Journal of Vegetation Science* **28**: 238-249.
8. Adler, P. B., **K. Byrne**, and J. Leiker. 2013. Can the past predict the future? Experimental tests of historically-based population models. *Global Change Biology* **19**: 1793-1803.
7. Robinson T. M. P., K. J. La Pierre, M. A. Vadeboncoeur, **K. M. Byrne**, M. L. Thomey, and S. E. Colby. 2013. Seasonal, not annual precipitation drives community productivity across ecosystems. *Oikos*, **122**: 727-738.
6. **Byrne, K. M.**, W. K. Lauenroth, and P. B. Adler. 2013. Contrasting effects of precipitation manipulations on production at two sites within the central grassland region, USA. *Ecosystems*, **16**, 1039-1051.
5. Evans S. E., **K. M. Byrne**, W. K. Lauenroth, and I. C. Burke. 2011. Defining the limit to resistance in a drought-tolerant grassland: long-term severe drought significantly reduces the dominant species and increases ruderals. *Journal of Ecology*, **9**: 1500-1507.
4. **Byrne, K. M.**, W. K. Lauenroth, P. B. Adler, and C. M. Byrne^u. 2011. Estimating Aboveground Net Primary Production in Grasslands: a Comparison of Non-Destructive Methods. *Rangeland Ecology and Management* **64**: 9-12.
3. Buhnerkempe, M., N. Burch, S. Hamilton, **K. M. Byrne**, E. Childers, K. A. Holfelder, L. McManus, M. I. Pyne, G. Schroeder, and P. F. Doherty, Jr. 2011. The utility of transient sensitivity for wildlife management and conservation: Bison as a case study. *Biological Conservation* **144**: 1808-1815
2. Pyne, M. I., **K. M. Byrne**, P. F. Doherty, Jr., K. A. Holfelder, L. McManus, M. Buhnerkempe, N. Burch, E. Childers, S. Hamilton, G. Schroeder. 2010. Survival and Breeding Transitions for a Reintroduced Bison Population: a Multi-state Approach. *Journal of Wildlife Management* **74**: 1464-1471.
1. **Byrne, K. M.**, W. K. Lauenroth, and L. McManus. 2010. Non-native Plant Species Impacts on Production and Diversity in the Front Range of Colorado. *Western North American Naturalist* **70**: 288-295.

RECENT PRESENTATIONS

Undergraduate student^u; Graduate student^g
 2024

- Walter, K.^g, **K Byrne**, and others. Evaluating the potential of the soil seed bank for natural regeneration of native species across a gradient of cheatgrass invasion (poster). Ecological Society of America. Long Beach, CA.
- Sotingco, J.^g, C. Cuellar-Gempeler, and **K. Byrne**. Microbial association with *Astragalus applegatei* roots: arbuscular mycorrhizae fungi communities (poster). Ecological Society of America. Long Beach, CA.
- Krause, A.^g, E. Chavez-Velasco^g, **K. Byrne**, and others. Characterizing and contextualizing drought survival strategies of CA coastal grassland species (poster). Ecological Society of America. Long Beach, CA.

Hopping, K. A., M. Sorrentino, A. Hulet, M.-A. de Graaff, R. Kehler, S. Arispe, **K. Byrne**, and others. Early indications of the potential of sheep targeted grazing as a cheatgrass and wildfire risk management tool. U.S. Forest Service Region 6 Range All Hands Meeting. Pendleton, OR.

Byrne, K.M., K. Walter^g, J. Scott^u, M. Sorrentino^g, Kylie Stear^u, and K. A. Hopping. Hidden beneath our feet: can the soil seed bank be used for restoration across a gradient of cheatgrass invasion in sheep-grazed sagebrush steppe (poster)? Society for Range Management Annual Meeting. Sparks, NV.

2023

Byrne, K.M., K. Walter^g, J. Scott^u, M. Sorrentino^g, Kylie Stear^u, and K. A. Hopping. Seeds underhoof: can the soil seed bank facilitate restoration of sheep-grazed, cheatgrass-invaded rangelands (poster)? West Central States Wool Growers Convention. Boise, ID.

Bartley, J.^g, **K. M. Byrne**, and H. S. Zald. Physical characteristics and fine root density within duff mounds of old-growth sugar and Jeffrey pines in a fire-excluded Sierran mixed-conifer forest. Ecological Society of America. Portland, OR.

Chavez, F.^g, A. M. Nunes, and **K. M. Byrne**. Hierarchical responses to drought and drought recovery in two sagebrush steppe plant communities (poster). Ecological Society of America. Portland, OR.

K. M. Byrne. Educational gains from game-based learning: utilizing the Kahoot! platform in the classroom (interactive presentation). Cal Poly Humboldt 4th Annual Teaching Excellence Symposium.

2021

Kelly, S.^u, C. McKinney^u, and **K. M. Byrne**. Innovation in Restoration: Estimating Seed Counts Using a Photography App. National Conference for Undergraduate Research. Virtual.

Nunes, A.^g and **K. M. Byrne**. Drought alters soil seed bank composition within a sagebrush community: decreasing native forb seeds and increasing invasive grass seeds. Society for Range Management Annual Meeting. Virtual.

2020

Stewart, S.^u and **K. M. Byrne**. The Impact of invasion and removal of *Lupinus arboreus* on seedbanks in coastal sand dune environments (poster). Northern California Botanists Symposium. Chico, CA.

2019

Byrne, K. M. Restoring a population of Applegate's milkvetch (*Astragalus applegatei*): lessons learned for conservation. Northern California Botanists Symposium. Chico, CA.

INVITED PUBLIC TALKS

Beneath our feet: harnessing the power of the soil seed bank for restoration. Idaho Native Plant Society, Pahove Chapter. 2023

Invasive species: what defines them and how can we manage them? Eel River Arundo Eradication Project Virtual Outreach Event. 2023

Astounding *Astragalus* in Humboldt County and beyond. California Native Plant Society, North Coast Chapter. 2019

Conservation of Applegate's milkvetch: one of Oregon's most imperiled plants. Oregon Native Plant Society, Siskiyou and Klamath Basin Chapters. Klamath Falls and Ashland, OR. 2017

RECENT FUNDING¹²

Active

Ecosystem services for grazing and conservation across a restoration chronosequence in California coastal prairie. California Agricultural Research Institute (ARI) Grants Program. \$92,157	2024 – 2027
Refining management needs for Applegate's milkvetch (<i>Astragalus applegatei</i>) – Year 1 of 3. Oregon Dept. of Agriculture. \$34,303 (with C. Cuellar-Gempeler)	2024
Establishing drought resilient grassland restoration networks in California. UC Climate Action Seed Grant Proposal. \$1,501,716 (co-PI with J. Luong and four others)	2023 – 2025
Predicting tree failure in Northwestern California. Pacific Gas & Electric, \$497,070 (co-PI with L. Kerhoulas and R. Sherriff)	2023 – 2026
Seeds underhoof: can the soil seed bank facilitate restoration of sheep-grazed, cheatgrass-invaded rangelands? USDA Western SARE Sabbatical Grant. \$71,104 (co-PI with K. Hopping)	2023 – 2024
Student opportunities to support native seed collection and habitat restoration in Northern California. Bureau of Land Management, California State Office. \$231,846	2022 – 2027
Quantifying the effects of herbicide and targeted grazing on medusahead thatch and the soil seed bank over time. Bureau of Land Management, Lakeview Klamath Falls Office. \$33,000. 2022 – 2023 Year 1 - 3 Funding	2022 – 2026

Past

Applegate's milkvetch 2023 monitoring at Ewauna Flat Preserve. The Nature Conservancy, \$1,995	2023
Quantification and mitigation of large pine mortality after prescribed burning in a drought altered Sierra Nevada mixed-conifer forest, California USA. USDA McIntire-Stennis. \$75,000 (with H. Zald)	2020 – 2023
Lasting impacts: predicting the quality and quantity of livestock forage production in northeastern California after severe drought ends. California Agricultural Research Institute (ARI) Grants Program. \$49,349	2021 – 2023
Fungal community associated with Applegate's milkvetch: a microbial approach to plant restoration. U.S. Fish and Wildlife Service, Pacific Southwest Region. \$16,685 (co-PI with C. Gempeler)	2020 – 2022
Demographic monitoring of a rare southern Oregon endemic, <i>Astragalus applegatei</i> M. Peck. U.S. Fish and Wildlife Service, Pacific Southwest Region. ~\$142,100	2016 – 2022
Assessing the impacts of drought on the quality and quantity of livestock forage production in northeastern California. California Agricultural Research Institute (ARI) Grants Program. \$43,462	2018 – 2021
Experimental Restoration Method for Novel Nitrogen-Enriched Plant Communities at Lanphere Dunes, Arcata, CA. HSU Research, Scholarship, and Creative Activities Program (RSCA) AY 18-19. \$4,848	2018 – 2019

¹ I am PI unless otherwise noted.

² ~ indicates approximate total funding awarded for this ongoing project over multiple contracts.

Drought and sagebrush: management implications. Bureau of Land Management, 2016 – 2021
 Lakeview Klamath Falls Office. \$75,000 (with K. Kaczynski)

Demographic monitoring of Applegate's milkvetch at Ewauna Flat Preserve, 2017 – 2020
 Klamath Falls, OR. Oregon Department of Agriculture. \$18,003

Multi-year inventory of *L. floccosa* ssp. *bellingneriana* and its habitat. Bureau of Land 2017
 Management, Lakeview Klamath Falls Office. \$10,238

SYNERGISTIC ACTIVITIES

- California State University STEM-NET Faculty Fellow 2024 – 2025
- Invited Member - Technical Working Group to Develop Protocol for 2021 – 2022
 ranchers to monitor rangeland soil Carbon, Point Blue Conservation
 Science, Petaluma, CA.
- Session and Keynote Speaker Organizer (Traditional Ecological Knowledge 2022
 and Ethnobotany) for the 2022 Northern California Botanists Symposium
 (and Board Member, 2020 - present).
- Completed 6 wk summer academy, "Humanizing online STEM courses," 2021
 offered by the California Community Colleges Virtual Campus, to learn
 techniques to create a more equitable learning environment online.
- Actively involve 29 undergraduate students in research resulting in 2017 – pres
 presentations at professional meetings (3 undergraduates, including one
 non-traditional first-generation college student and two female students),
 two student first-author publications, and one student co-author.
- Site participant, International Drought Experiment. 2016 – pres
- **Reviewer** - *Ecology, Ecosphere, Ecosystems, Ecological Restoration,* 2011 – Pres
Functional Ecology, Global Change Biology, Journal of Arid Environments,
Journal of Ecology, Oecologia, Pedosphere, Perspectives in Plant Ecology,
Evolution, and Systematics, PLOS One, Rangeland Ecology & Management,
Restoration Ecology, Science of the Total Environment, Western North
American Naturalist.