Natural Resources and Environmental Sciences
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TYLER K. REFSLAND

Professional Appointments and Education

2018 - now Postdoctoral Research Associate, University of Nevada, Reno
Advisor: Hall J. Cushman

2018 PhD, Ecology, University of Illinois at Urbana-Champaign, Illinois
Advisor: Dr. Jennifer M. Fraterrigo

2011 BA, Biology and Environmental Studies, Saint Olaf College, Minnesota
Honors in Biology

Research Interests

Global change biology, tree drought mortality, ecophysiology, dendroecology, multiple stressor effects on forest ecosystem function, functional trait ecology, remote sensing

Publications

2. **Refsland, T.K.** and J.M. Fraterrigo. 2018. Fire increases drought vulnerability of *Quercus alba* seedlings by altering forest microclimate and nitrogen availability. Functional Ecology. https://doi.org/10.1111/1365-2435.13193

1. **Refsland, T.K.** and J. M. Fraterrigo. 2017. Both canopy and understory traits act as response-effect traits in fire-managed forests. Ecosphere 8(12). https://doi.org/10.1002/ecs2.2036

Publications – *in revision, review or preparation*

Cushman, J. H., L. Sanders and **T.K. Refsland**. Long-term and interactive effects of different mammalian consumers on growth, survival and recruitment of dominant tree species. *In review: Journal of Ecology*

Refsland, T.K., B. Knapp, K. Stephan and J.M. Fraterrigo. Long-term, repeat fires limit tree growth under favorable climate but not drought conditions. *Submitted: Ecological Applications*

Refsland, T.K., Dale Brockway, Jeff Glitz, Tom Lewis, Kirsten Stephan, Jennifer Fraterrigo. Fire-driven filtering of plant functional traits and consequences for forest drought vulnerability. *In preparation*

Grants & Fellowships

2019-2020 Co-PI; Lake Tahoe License Plate Program; *Long-term dynamics of aspen across the Lake Tahoe Basin: drivers of forest health and identification of restoration priorities;* $114,476

2018-2019 Coauthor (Co-PI equivalent as postdoc); USDA National Institute of Food and Agriculture Hatch Project; *Long-term health of aspen stands: understanding the drivers of population decline for a critical foundation species;* $90,000

2017-2018 Fall Travel Grant, Graduate College, U of Illinois; $500

2015-2017 Summer Research Grants, PEEC, U of Illinois; $2,500

2013-2017 Spring Travel Grants, PEEC, U of Illinois; $2,350

2014-2015 Joint Fire Science Program Graduate Research Innovation Award (GRIN); $25,000; Co-PI with J.M. Fraterrigo

2015 Phillip Smith Memorial Fund, Illinois Natural History Survey; $1,000

2015 Clark Summer Research Grant, School of Integrative Biology, U of Illinois; $1,000

Awards & Honors

2016-2017 University list of teachers rated as excellent (top 30%) by their students

2016 Lebus Fund Graduate Student Award, School of Integrative Biology, U of Illinois

2014 NSF Graduate Research Fellowship Program, *Honorable Mention*

Research Skills

Laboratory skills: Lachat QuickChem 8500 for NH4, NO_x and PO_4 analyses; Costech ECS 4010 for C/N analysis; LI-COR 6100 with fluorescence chamber; PMS pressure chamber; wood tissue preparation using microtome; cross-dating with Velmex UniSlide

Quantitative skills: ArcGIS; SQL queries in Access; linear and non-linear mixed effects models, time-series analysis and managing large databases in R; COFECHA cross-dating software

Leadership & Professional Development

2017 Undergraduate Research Apprenticeship Program (URAP): selected as a graduate student mentor to introduce and guide a student (U of Illinois) through the entire research process, from generating hypotheses to presenting results

2017 Early Career Mentoring Program, Ecological Society of America Early Career Ecologist Section

2016 Writing Across the Curriculum Workshop: developed skills for responding to student writing and providing clear, constructive feedback

Undergraduate Mentoring

2013-2018 Lead supervisor and mentor of 8 students (U of Illinois) enrolled for course credit through independent study or for Honors in Biology

2017 International Summer Immersion Program (ISIP), U of Illinois: supervised and mentored an international exchange student working full-time on research

2014-2017 Researcher's Initiative Program, U of Illinois: supervisor and mentor of four students in the program, which aims to introduce research to students from backgrounds underrepresented in STEM fields

2014-2015 Summer Research Internship Program, College of ACES, U of Illinois: supervised three full-time undergraduate field assistants

Teaching

2017 Ecology Merit *instructor*: solely responsible for developing the lesson plan, instructing, and facilitating group discussion, with an emphasis on promoting peer teaching and interactions among students from backgrounds underrepresented in STEM fields

2014, 2016 Ecology *lab instructor*: led weekly field trips, discussions and lessons on writing skills in this intensive lab course that fulfills a composition credit for the biology major

2013 Environmental Biology Discussion *TA*: led mini-lectures and facilitated student-driven discussion on topics of environmental science and sustainability

Online courses

2017, 2018 Environmental Biology Online *course coordinator*: solely responsible for facilitating communication between students, TAs and instructor in online learning platform (Moodle). Enrollment ~ 375 students

2015 Environmental Biology Online *TA*: moderated and graded online discussion forums, with emphasis on environmental degradation, society and sustainability

Professional Service & Outreach

Professional service

2017 Conference co-organizer: Midwest Ecology & Evolution Conference (MEEC), Urbana, IL

2016-2017 Steering Committee, Program in Ecology, Evolution and Conservation Biology, U of Illinois

2015 Department Faculty Search Committee, Natural Resources and Environmental Sciences, U of Illinois

2015 Conference lead organizer and abstract reviewer: Graduate Students in Ecology & Evolutionary Biology Symposium, Urbana, IL

Outreach

2014-2016 Volunteer judge at Next Generation Science and Engineering Fair, Next Generation Elementary and Middle School, Champaign, IL

2015-2016 Vice President and Treasurer, Graduate Students in Ecology and Evolutionary Biology, U of Illinois

2015 Lead Fundraiser, Graduate Students in Ecology and Evolutionary Biology, U of Illinois

2014-2015 Plants iView after-school program volunteer, Urbana Middle School, Urbana, IL

Selected Conference Presentations

*undergraduate mentee

2018 **Refsland, T.K.**, B.O. Knapp, K. Stephan and J.M. Fraterrigo. Long-term changes to fire frequency limit adult tree growth under favorable climate but not drought conditions. Ecological Society of America Annual Meeting. New Orleans, LA. August 5-10, 2018.

Vozzo, J.*, **T.K. Refsland**, J.M. Fraterrigo. Increased fire frequency reduces aboveground net primary productivity of a Missouri Ozark oak-hickory forest. University of Illinois Undergraduate Research Symposium. Urbana, IL. April 19, 2018.

2017 **Refsland, T.K.**, B. Knapp, J.M. Fraterrigo. Effect of experimentally manipulated fire regimes on the response of forests to drought. American Geophysical Union Fall Meeting. New Orleans, LA. Dec 11-15, 2017. (Poster)

Refsland, T.K., J.M. Fraterrigo. Forest drought vulnerability after fire: how fire-induced resprouting and altered microclimate affect *Quercus* water relations under experimental drought. Ecological Society of America Annual Meeting. Portland, OR. Aug 6-11, 2017.

Ennab, N.*, **T.K Refsland**, J.M. Fraterrigo. A meta-analysis of fire-induced filtering of plant traits and the implications for carbon storage. University of Illinois Undergraduate Research Symposium. Urbana, IL. Apr 28, 2017. (Poster) *Awarded 'Outstanding presentation' by University of Illinois Office of Undergraduate Research*

Khan, T.*, **T.K Refsland**, J.M. Fraterrigo. The effect of fire disturbance on adult *Quercus* spp. growth in drought years. University of Illinois Undergraduate Research Symposium. Urbana, IL. Apr 28, 2017. (Poster)

Swire, M.*, **T.K Refsland**, J.M. Fraterrigo. Effect of prescribed fire on forest drought resistance and resilience: a dendrochronological approach. University of Illinois Researcher's Initiative Symposium. Urbana, IL. Apr 24, 2017. (Poster)

Refsland, T.K., J.M. Fraterrigo. Plant response-effect trait linkages along a resource gradient in fire-managed forests: implications for soil carbon stocks. Midwest Ecology and Evolution Conference. Urbana, IL. Mar 17-19, 2017.

2016 **Refsland, T.K.**, J.M. Fraterrigo. Does fire-induced re sprouting in oaks mediate their drought response? Ecological Society of America Annual Meeting. Fort Lauderdale, FL. Aug 7-12, 2016.

Repp, V.*, **T.K. Refsland**, J.M. Fraterrigo. Effects of fire-driven vegetation change on mycorrhizal abundance, colonization and host tree fitness. Illinois Undergraduate Research Symposium. Urbana, IL. Apr 17-23, 2016. (Poster)

Refsland, T.K., J.M. Fraterrigo. Potential for prescribed fire to promote drought resistance of Quercus alba seedlings in a changing climate. Central Hardwoods Conference. Columbia, MO. Mar 28-Apr 1, 2016.

Milla, K.*, **Refsland, T.K.**, V. Repp*, J. Woodyard*, J.M. Fraterrigo. Fire-driven changes to the forest understory community strongly influence tree seedling fitness. Midwest Ecology and Evolution Conference. Oxford, OH. Mar 19-20, 2016.

Refsland, T.K. and J.M. Fraterrigo. Influence of prescribed fire on drought vulnerability of *Quercus alba* seedlings. Midwest Ecology and Evolution Conference. Oxford, OH. Mar 19-20, 2016.

2015 **Refsland, T.K.**, J.M. Fraterrigo. Effects of recurring fire disturbance on plant functional diversity may promote soil carbon accumulation in temperate deciduous forest. Ecological Society of America Annual Meeting. Baltimore, MD. Aug 9-14, 2015.

Refsland, T.K., J.M. Fraterrigo. Fire-induced changes in plant functional diversity may promote soil carbon inputs in temperate deciduous forests. Fire in Eastern Oak Forests Conference. Tuscaloosa, AL. May 27-29, 2015. (Poster)

Milla, K.*, **T.K. Refsland**, J.M. Fraterrigo. Prescribed fire effects on tree fitness and mycorrhizal relations. Illinois Undergraduate Research Symposium. Urbana, IL. Apr 19-25, 2015. (Poster)

2014 **Refsland, T.K.**, J.M. Fraterrigo. Confronting the indirect effects of prescribed fire: the impact of understory vegetation shifts on carbon stocks of oak-hickory forests. Ecological Society of America Annual Meeting. Sacramento, CA. Aug 10-15, 2014. (Poster)

Refsland, T.K., J.M. Fraterrigo. How does low-intensity, fire-based management impact ecosystem services? Oak Woodlands & Forest Fire Consortium Workshop. Harrisburg, IL. Jan 19, 2014.

2011 **Refsland, T.K.**, L.A. DeGuire, A.D. Webb, E.S. Babcock. Leaf litter processing in an impaired southeastern Minnesota stream: The indirect effects of flow velocity on decomposition. Ecological Society of America Annual Meeting. Austin, TX. Aug 7-12, 2011. (Poster)

Presentations - *invited*

2019 **Refsland, T.K.**, B.O. Knapp, K. Stephan and J.M. Fraterrigo. Sixty years of fire manipulation in the Missouri Ozarks reveals climate-dependent effects of repeat burns on forest growth. International Fire Ecology and Management Congress. Tucson, AZ. November 18-22, 2019 *(forthcoming)*

2018 **Refsland, T.K.** Fire-driven changes to tree drought vulnerability and carbon storage in temperate broadleaf forests. University of Nevada, Reno.

Professional Memberships

2011-now Ecological Society of America (ESA), Physiology Section

2017-now American Geophysical Union (AGU)