

# Curriculum Vitae

## KIRSTEN STEPHAN

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### Academics

VISITING ASSOCIATE PROFESSOR OF FORESTRY, 2016-present

Division of Forestry and Natural Resources, West Virginia University, Morgantown, WV 26506, USA

RESEARCH SCIENTIST, Jan-Oct 2016

Department of Life and Physical Sciences, Lincoln University, Jefferson City, MO 65101, USA

ASSOCIATE PROFESSOR OF BIOLOGY, 2013-2015

Department of Life and Physical Sciences, Lincoln University, Jefferson City, MO 65101, USA

ADJUNCT ASSISTANT PROFESSOR, 2012-present & GRADUATE FACULTY, 2014-present

Department of Forestry, University of Missouri, Columbia, MO 65201, USA

URBAN FORESTER, 2010-2015

Cooperative Research, Lincoln University, Jefferson City, MO 65101, USA

ASSISTANT PROFESSOR OF BIOLOGY, 2007-2013

Department of Life and Physical Sciences, Lincoln University, Jefferson City, MO 65101, USA

PH.D. IN NATURAL RESOURCES, 2007

Department of Forest Resources, University of Idaho, Moscow, ID 83843, USA

Dissertation: Wildfire and Prescribed Burning Effects on Nitrogen Dynamics in Rocky Mountain Watershed Ecosystems

M.S. IN BIOLOGY, 2001

Friedrich-Schiller-University, 07743 Jena, Germany

Major: Ecology; Minors: Botany, Zoology, English

Thesis: Succession and C-S-R Functional Types in a Perturbed Grassland Ecosystem

Umeå University, 90730 Umeå, Sweden, educational exchange 1997/98

### Administration

Laboratory Coordinator of Division of Forestry shared faculty research lab, West Virginia University, 2016-present

Lincoln University Representative of the 1890 McIntire-Stennis Research Coordinating Council (MSRCC), 2011-2015

Lincoln University McIntire-Stennis Administrative-Technical Representative (A-TR), 2010-2016

### Current and Past Teaching

- West Virginia University, Jan 2016 – present
  - Forest Botany, 4 cr., 3 hrs lecture and 2-hr laboratory (FOR 293)
  - Tree Physiology, 4 cr., 3 hrs lecture and 3-hr laboratory (FOR 493/ FOR 693)
- Lincoln University (in order of declining frequency), Aug 2007- Dec 2015
  - General Botany, 4 cr., 3 hrs lecture and 3-hr laboratory (BIO 106/AGR 107)
  - Plant Physiology, 4 cr., 3 hrs lecture and 3-hr laboratory (BIO 311/AGR 329)
  - Principles of Biology, 3 cr., 3 hrs lecture (BIO 103)
  - Taxonomic Botany, 4 cr., 2 hrs lecture and 2 2-hr laboratories (BIO 308/AGR323)
  - Principles of Biology Laboratory, 1 cr., 2-hr laboratory (BIO 104L)
  - Ecology, 4 cr., 3 hrs lecture and 1-hr discussion session (BIO 423)

### Research Interests

- Integrating soil and vegetation responses to disturbance and management
- Element cycling in terrestrial ecosystems
- Sustainable natural resources management

### Research Experience

WEST VIRGINIA UNIVERSITY, 2017 – present

- The role of understory nitrogen metabolism in watershed-level nitrogen retention in an Appalachian hardwood forest

LINCOLN UNIVERSITY IN MISSOURI, 2007- 2016

- Long-term effects of prescribed burning on soil and plant characteristics in the Missouri Ozark mountains; 2009-present
- Effects of land management on plant community structure and composition in Prairie Fork Conservation Area, Missouri; 2010-2012
- Vegetation, soil, and microclimate heterogeneity in a 70-year old abandoned urban limestone quarry in Jefferson City, Missouri; 2010-2012
- Improving quantitative understanding of urban forest carbon sequestration and climate mitigation; 2012-2017

UNIVERSITY OF IDAHO, Department of Forest Resources, Moscow, ID, USA, 2003-2007

Doctoral research (advisor: Dr. Kathleen Kavanagh)

- Study of nitrogen fate in watershed ecosystems after wildfire and prescribed burning in the Rocky Mountains of Idaho, USA
- Study of nitrogen cycling post-fire using natural abundance  $^{15}\text{N}$  in terrestrial and aquatic ecosystem components
- Evaluating the suitability of the diffusion method for soil extracts at natural abundance  $^{15}\text{N}$

FRIEDRICH SCHILLER UNIVERSITY, Institute of Ecology, Jena, Germany, 1999-2001

Master's research (advisor: Dr. Winfried Voigt)

- Study of vegetation regeneration in an anthropogenically disturbed ecosystem using C-S-R plant functional types and multivariate statistics

### **Competitive Grants, Cooperative Research Agreements & Gifts**

**STEPHAN K.** Mentoring Students' in Natural Resources to Meet Triple Challenges of Biodiversity: Managing Invasive Species and Rare Species under Changing Climatic Conditions. USDA-NIFA Capacity Building Grant. \$149,072 2012-2016.

**STEPHAN K.** Evaluating Wick Applied Herbicide Treatments to Control Winged Sumac (*Rhus copallinum* L.) While Minimizing Impact on Native Forbs. Cooperative Research Agreement with Missouri Department of Conservation. \$11,986.01. 2012

RIEDLE J.D., ANDREI A. AND **K. STEPHAN.** Experiential Learning, Recruitment, and Retention in Natural Resources. USDA-NIFA-Capacity Building Grant (P-003406). \$127,382. 2011

**STEPHAN K.** Evaluating Wick Applied Herbicide Treatments to Control Winged Sumac (*Rhus copallinum* L.) While Minimizing Impact on Native Forbs. Cooperative Research Agreement with Missouri Department of Conservation. \$18,983.12. 2011

**STEPHAN K.** Improving Student Skills in Conceptual Understanding and Application. A Model for Achieving Success in STEM (AMASS), Faculty Development Grant, NSF HBCU-UP. \$5,000. 2011

**STEPHAN K.** Evaluating Wick Applied Herbicide Treatments to Control Winged Sumac (*Rhus copallinum* L.) While Minimizing Impact on Native Forbs. Cooperative Research Agreement with Missouri Department of Conservation. \$20,300. 2010

**STEPHAN K.** Vegetation measurements on the Prairie Fork Conservation Area. Prairie Fork Charitable Endowment Trust. Gift \$10,000. 2010

**STEPHAN K.** The Effects of Forest Management on Watershed N dynamics. US Department of Defense, Army Research Office (W911NF-05-2-0003) via LU Cooperative Research Environmental Science Group. \$20,000. 2008

### **Non-competitive Formula Funding, McIntire-Stennis (Forestry)**

**STEPHAN, K.** The role of understory nitrogen metabolism in watershed-level nitrogen retention in an Appalachian hardwood forest. \$ 150,390. 2017-2021

**STEPHAN, K.** Improving Quantitative Understanding of Urban Forest Carbon Sequestration and Climate Mitigation. \$ 70,061/yr. 2012-17

EIVAZI, F. AND **K. STEPHAN.** Vegetation, Soil, and Microclimate Heterogeneity in a 70-year Old Abandoned Urban Limestone Quarry in Jefferson City, Missouri. \$ 63,000-70,061/yr. 2010-12

## Professional Experience

Environmental consultant at Agrarian and Environmental Analytics Plc, Jena, Germany, 2002

- Prepared documents for agricultural and industrial projects requiring an authorization procedure to comply with the German Federal Ambient Pollution Control Act
- Conducted environmental impact assessments of agricultural and industrial projects
- Introduced and implemented the Environmental Management and Audit Scheme (voluntary European Union-wide program to promote environmental protection) in a broad spectrum of companies

Fisheries technician (seasonal), U.S. Forest Service at Lowman Ranger District, Boise National Forest, Idaho, U.S.A., 2000 & 2001

- Stream fish and riparian plant inventories
- Report writing for bull trout monitoring program and westslope cutthroat trout radio telemetry project
- Carried out Burned Area Emergency Rehabilitation survey

## Professional Affiliations

Ecological Society of America (ESA) since 2005

Society of American Foresters (SAF) since 2010

## Publications

**STEPHAN, K.**, K.L. KAVANAGH AND A. KOYAMA. 2015. Comparing the Influence of Wildfire and Prescribed Burns on Watershed Nitrogen Biogeochemistry Using <sup>15</sup>N Natural Abundance in Terrestrial and Aquatic Ecosystem Components. *PlosOne* DOI:10.1371/journal.pone.0119560

KNAPP, B.O., **K. STEPHAN** AND J.A. HUBBART. 2015. Structure and composition of an oak-hickory forest following over 60 years of repeated prescribed burning in Missouri, U.S.A. *Forest Ecology and Management* 344:95-109 doi:10.1016/j.foreco.2015.02.009

HUBBART, J.A., E. KELLNER, L. HOOPER, A.R. LUPO, P.S. MARKET, P.E. GUINAN, **K. STEPHAN**, N. I. FOX AND B.M. SVOMA. 2014. Localized Climate and Surface Energy Flux Alterations across an Urban Gradient in the Central U.S. *Energies* 7(3):1770-1791; doi:10.3390/en7031770

**STEPHAN, K.**, K.L. KAVANAGH AND A. KOYAMA. 2012. Effects of spring prescribed burning and wildfires on watershed nitrogen dynamics of central Idaho headwater areas. *Forest Ecology and Management* 263:240-252

KOYAMA, A., **K. STEPHAN** AND K.L. KAVANAGH. 2011. Fire effects on soil N transformations in central Idaho coniferous forests - Prescribed fires vs. wildfires. *International Journal of Wildland Fire* 21:69-78 <http://dx.doi.org/10.1071/WF10132>

KOYAMA, A., K.L. KAVANAGH AND **K. STEPHAN**. 2010. Wildfire effects on soil gross nitrogen transformation rates in coniferous forests of central Idaho, USA. *Ecosystems* 13:1112-1126 (<http://www.springerlink.com/content/54u77x228m172772/fulltext.pdf>)

- STEPHAN, K., M. MILLER AND M. DICKINSON.** 2010. First-order fire effects on herbs and shrubs: present knowledge and process modeling needs. *Fire Ecology* 6:95-114  
(<http://www.fireecology.net/Issues/volume-5-issue-3.html>)
- STEPHAN, K. AND K.L. KAVANAGH,** 2009. Suitability of the diffusion method for ammonium and nitrate in KCl extracts for <sup>15</sup>N analysis at natural abundance. *Soil Science Society of America Journal* 73:1-10  
(<https://www.soils.org/publications/sssaj> - doi: 10.2136/sssaj2007.0079)
- ZURSTADT C.F. AND K. STEPHAN,** 2004. Seasonal migration of westslope cutthroat trout in the Middle Fork Salmon River drainage, Idaho. *Northwest Science* 78:278-285

**~ in preparation**

- HUBBART, J.A. AND K. STEPHAN.** Quantifying alterations to evapotranspiration and soil water status in a Central U.S. prairie ecosystem undergoing restoration. *Journal of Agriculture and Forest Meteorology*
- HUBBART, J.A. AND K. STEPHAN.** Forest microclimate and soil hydrologic process alterations after 60 years of prescribed burning in the Ozark Mountains. *Forest Science*
- STEPHAN, K. AND J.A. HUBBART.** Effects of long-term prescribed burning on soil chemical properties in the Missouri Ozarks. *Forest Ecology and Management*
- STEPHAN, K. AND J.A. HUBBART.** Soil, plant and microclimate heterogeneity in an abandoned limestone quarry. *Journal of Environmental Quality*

**Presentations and Posters** (\*presenter, §Lincoln University undergraduate presenter, #University of Missouri graduate student presenter)

- ASAHL<sup>§</sup>, D., M. MEARS<sup>§</sup>, L. DOWNING<sup>§</sup>, E. SKORNIA, AND K. STEPHAN.** 2015. Germination rates of *Callirhoe bushii* and *Lespedeza cuneata* under future climate conditions in Missouri. Poster presentation at Missouri Natural Research Conference (MNRC), Feb 4-6, 2015, Osage Beach, Missouri, USA; Lincoln University Research symposium, Apr 14, 2015, Jefferson City, Missouri, USA; Missouri Academy of Science Meeting (MAS), Apr 18, 2015, Warrensburg, Missouri, USA; and at the Botany Conference (Botanical Society of America), Jul 25-30, 2015, Edmonton, Alberta, Canada
- BEAVEN<sup>#</sup>, K.R., J.A. HUBBART, AND K. STEPHAN.** 2015. Investigating soil carbon, nitrogen and respiration across an urban to forested gradient in mid-Missouri. Poster presentation at Missouri Natural Research Conference (MNRC), Feb 4-6, 2015, Osage Beach, Missouri, USA
- SKORNIA<sup>§</sup>, E. AND K. STEPHAN.** 2014. Fate of endangered pondberry (*Lindera melissifolia*) in a changing climate. Poster presentations at Missouri Natural Research Conference (MNRC), Feb 5-7, 2014, Osage Beach, Missouri, USA and at the Botany Conference (Botanical Society of America), Jul 26-30, 2014, Boise, Idaho, USA
- SKORNIA<sup>§</sup>, E. AND K. STEPHAN.** 2014. Fate of endangered pondberry (*Lindera melissifolia*) in a changing climate. Oral presentations at Lincoln University Research symposium, Apr 22, 2014, Jefferson City, Missouri, USA and at Missouri Academy of Science Meeting (MAS), Apr 26, 2014, Warrensburg, Missouri, USA

- STEINWAND, C., S. JOHNSON<sup>§</sup>, AND **K. STEPHAN**. 2014. Fire and Climate Effects on *Delphinium exaltatum* in the Ozark Region of Missouri. Poster presentations at Missouri Natural Research Conference (MNRC), Feb 5-7, 2014, Osage Beach, Missouri, USA and at the Botany Conference (Botanical Society of America), Jul 26-30. 2014, Boise, Idaho, USA
- STEINWAND, C., S. JOHNSON<sup>§</sup>, AND **K. STEPHAN**. 2014. Fire and Climate Effects on *Delphinium exaltatum* in the Ozark Region of Missouri. Oral presentations at Lincoln University Research symposium, Apr 22, 2014, Jefferson City, Missouri, USA and at Missouri Academy of Science Meeting (MAS), Apr 26, 2014, Warrensburg, Missouri, USA
- HILL<sup>§</sup>, J., **K. STEPHAN**, M. UNDERWOOD, E. HORNER. 2014. Spring and Summer Climate Effects on the Vigor of Endangered Mead's Milkweed. Poster presentations at Missouri Natural Research Conference (MNRC), Feb 5-7, 2014, Osage Beach, Missouri, USA and at the Botany Conference (Botanical Society of America), Jul 26-30. 2014, Boise, Idaho, USA
- HILL<sup>§</sup>, J., **K. STEPHAN**, M. UNDERWOOD, E. HORNER. 2014. Spring and Summer Climate Effects on the Vigor of Endangered Mead's Milkweed. Oral presentation at Missouri Academy of Science Meeting (MAS), Apr 26, 2014, Warrensburg, Missouri, USA
- HUBBART\*, J.A., C.M. CARSON, K.R. BEAVEN AND **K. STEPHAN**. 2014. Urban Forests: Mitigating the Urban Heat Island and Climate Change. Poster presentations at Missouri Natural Research Conference (MNRC), Feb 5-7, 2014, Osage Beach, Missouri, USA
- BEAVEN<sup>#</sup>, K.R., C.M. CARSON, J.A. HUBBART AND **K. STEPHAN**. 2014. Investigating Soil Characteristics Across a Land-Use Gradient in Central Missouri. Poster presentations at Missouri Natural Research Conference (MNRC), Feb 5-7, 2014, Osage Beach, Missouri, USA
- SELBY<sup>§</sup>, B., **K. STEPHAN**, M. UNDERWOOD. 2012. Effects of wick-applied herbicides on invasive sumac and desirable forbs in Missouri prairies. Oral Presentation at Missouri Academy of Science Meeting (MAS), Apr 13-14, 2012, Columbia, Missouri, USA
- SELBY<sup>§</sup>, B., **K. STEPHAN**, M. UNDERWOOD. 2012. Effects of wick-applied herbicides on invasive sumac and desirable forbs in Missouri prairies. Poster Presentation at Missouri Natural Research Conference (MNRC), Feb 1-3, 2012, Osage Beach, Missouri, USA
- STEPHAN\***, **K.** AND J.A. HUBBART. 2011. Effects of long-term prescribed burning on soil organic carbon and total nitrogen content in the Missouri Ozarks. Oral Presentation at 96<sup>th</sup> Annual Meeting of the Ecological Society of America, Aug 7-12, 2011, Austin, Texas, USA
- STEPHAN\***, **K.** AND J.A. HUBBART. 2011. Vegetation Structure and Soil Water Content after 60 Years of Repeated Prescribed Burning in the Missouri Ozarks. Poster Presentation at the 4<sup>th</sup> Fire in Eastern Oak Forests Conference, May 17-19, 2011, Springfield, Missouri, USA
- WINSTON<sup>§</sup>, B. AND **K. STEPHAN**. 2011. Effects of 60 years of prescribed burning on soil organic carbon and nitrogen in Missouri oak-hickory forest. Poster presented at Missouri Academy of Sciences Meeting, Apr 15-16, 2011, Jefferson City, Missouri, USA
- SHINKUT<sup>§</sup>, S.G. AND **K. STEPHAN**. 2011. Effects of 60 years of prescribed burning on soil cations in Missouri Ozark oak-hickory forest. Poster presented at Missouri Academy of Sciences Meeting, Apr 15-16, 2011, Jefferson City, Missouri, USA
- STEPHAN, K.** 2011. Effects of long-term prescribed burning on soil properties and plant community structure in the Missouri Ozarks. Department of Forestry Seminar, University of Missouri, Columbia, Missouri, USA
- STEPHAN, K.**, E.M. MAGROWSKI<sup>§</sup>, M.J. ORDWAY AND S.E. HEARNE. 2011. Heterogeneity in abandoned urban limestone quarries – potential for conservation? Poster presentation at Missouri Academy of Sciences Meeting, Apr 15-16, 2011, Jefferson City, Missouri, USA

- STEPHAN\***, K., E.M. MAGROWSKI, M.J. ORDWAY AND S.E. HEARNE. 2011. Heterogeneity in abandoned urban limestone quarries – potential for conservation? Poster presentation at Missouri Natural Research Conference (MNRC), Feb 2-4, 2011, Osage Beach, Missouri, USA
- STEPHAN\***, K. AND J.A. HUBBART. 2011. Relationships between plant community structure and soil moisture after 60 years of repeated prescribed burning in the Missouri Ozarks. Oral presentation at Missouri Natural Research Conference (MNRC), Feb 2-4, 2011, Osage Beach, Missouri, USA
- STEPHAN, K.** 2010. Not just a textbook: Navigating the jungle of student-available media resources. Title III Train-the-Trainer oral presentation at Lincoln University, Jefferson City, Missouri, USA
- STEPHAN\***, K. AND J.A. HUBBART. 2010. Effects of long-term prescribed burning on soil chemical properties in the Missouri Ozarks. Oral presentation at Lincoln University Research Symposium, Apr 16, 2010, Jefferson City, Missouri, USA
- STEPHAN\***, K. AND J.A. HUBBART. 2010. Effects of long-term prescribed burning on soil chemical properties in the Missouri Ozarks. Oral presentation at Missouri Natural Research Conference (MNRC), Feb 3-5, 2010, Osage Beach, Missouri, USA
- HUBBART\*, J.A. AND **K. STEPHAN.** 2010. Forest soil hydrologic process alterations after 60 Years of prescribed burning. Oral presentation at Missouri Natural Research Conference (MNRC), Feb 3-5, 2010, Osage Beach, Missouri, USA
- STEPHAN\***, K. AND J.A. Hubbart. 2009. Effects of long-term prescribed burning on soil physical and chemical properties in the Missouri Ozarks. Poster presentation at the American Geophysical Union (AGU) meeting, Dec 14-18, 2009, San Francisco, California, USA
- STEPHAN, K.** 2009. From osmosis to evolution - Simulation software as a teaching tool. Title III Train-the-Trainer presentation at Lincoln University, Jefferson City, Missouri, USA
- STEPHAN, K.**, C. SMITH<sup>§</sup> AND J. YANG. 2009. Long-term effects of prescribed burning on soil pH and phosphate concentrations. Poster presentation at Missouri Academy of Science Meeting, April 2009, Maryville, Missouri, USA
- STEPHAN K.**, E. BACKES<sup>§</sup> AND J. YANG. 2009. Long-term effects of prescribed burning on soil carbon and nitrogen concentrations. Poster presentation at Missouri Academy of Sciences Meeting, April 2009, Maryville, Missouri, USA
- STEPHAN, K.**, C. SMITH<sup>§</sup> AND J. YANG. 2009. Long-term effects of prescribed burning on soil pH and phosphate concentrations. Poster presentation at Lincoln University Research Symposium, April 2009, Jefferson City, Missouri, USA
- STEPHAN K.**, E. BACKES<sup>§</sup> AND J. YANG. 2009. Long-term effects of prescribed burning on soil carbon and nitrogen concentrations. Poster presentation at Lincoln University Research Symposium, April 2009, Jefferson City, Missouri, USA
- HUBBART\*, J.H. AND **STEPHAN\***, K. 2008. Effects of forest harvest and wildfire on hydrologic processes and nitrogen dynamics in Rocky Mountain and Ozark Mountain watersheds. Oral presentation at Ecological Colloquium at Friedrich-Schiller-University Jena, Germany
- STEPHAN\***, K., A. KOYAMA, AND K.L. KAVANAGH. 2008. Influence of fire severity on watershed nitrogen cycling using <sup>15</sup>N natural abundance in terrestrial and aquatic ecosystem components. Poster presentation at Lincoln University Research Symposium, April 2008, Jefferson City, Missouri, USA

**STEPHAN\*, K., A. KOYAMA, AND K.L. KAVANAGH**

- ~2008. Wildfire and prescribed burning effects on nitrogen dynamics in central Idaho headwater ecosystems. Title III Train-the-Trainer oral presentation at Lincoln University, Jefferson City, Missouri, USA
- ~2007. Influence of fire severity on watershed nitrogen cycling using  $^{15}\text{N}$  natural abundance in terrestrial and aquatic ecosystem components. Poster presentation at American Geophysical Union (AGU) Fall Meeting, Dec 10-14, 2007, San Francisco, California, USA.
- ~2007. Soil nutrient status following prescribed burns and wildfire. Oral presentation at Intermountain Forest Tree Nutrition Cooperative Annual Meeting, Moscow, ID, USA
- ~2006. Comparison of wildfire and prescribed burn effects on nitrogen dynamics in central Idaho headwater ecosystems. Oral presentation at Spring Fire Management Meeting, Boise National Forest, Eagle, Idaho, USA
- ~2006. Comparison of wildfire and spring prescribed burn effects on nitrogen dynamics in Rocky Mountain headwater areas: fate of N and management implications. Poster presentation at 3<sup>rd</sup> International Fire Ecology and Management Congress. San Diego, California, USA
- ~2006. Comparison of wildfire and prescribed burn effects on N dynamics in headwater ecosystems in central Idaho, USA: N fate,  $\delta^{15}\text{N}$  and Processes. Oral presentation at 91<sup>st</sup> Annual Meeting of the Ecological Society of America, Memphis, Tennessee, USA
- ~2005. Fire effects on nitrogen dynamics in headwater systems. Oral presentation at 90<sup>th</sup> Annual Meeting of the Ecological Society of America, Montreal, Quebec, Canada
- ~2004. Fire effects on nitrogen concentration and nitrogen isotopic composition in riparian and upslope plants of headwaters. Poster presentation at 89<sup>th</sup> Annual Meeting of the Ecological Society of America Portland, Oregon, USA
- KOYAMA\*, A., **K. STEPHAN** AND K.L. KAVANAGH. 2006. Fire effects on soil N transformations in central Idaho coniferous forests – Prescribed fires vs. wildfires. Poster presentation at 3<sup>rd</sup> International Fire Ecology and Management Congress, San Diego, California, USA
- THOMPSON\*, M., A. KOYAMA, **K. STEPHAN** AND K.L. KAVANAGH. 2006. The effects of wildfire on hydraulic properties in conifers. Poster presentation at 3<sup>rd</sup> International Fire Ecology and Management Congress, San Diego, California, USA
- KOYAMA\*, A., M. THOMPSON, **K. STEPHAN** AND K.L. KAVANAGH. 2006. Fire effects on carbon dynamics in central Idaho coniferous forests. Poster presentation at the 91<sup>st</sup> Annual Ecological Society of America Meeting, Memphis, Tennessee, USA
- KOYAMA\*, A., **K. STEPHAN** AND K.L. KAVANAGH. 2004. Ash effects on nitrogen dynamics in soils and plants after a wildfire. Poster presentation at the 88<sup>th</sup> Annual Ecological Society of America Meeting, Portland, Oregon, USA