

Erin Wiley

Department of Plant Biology, Ecology and Evolution
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EMPLOYMENT

2024-present Assistant Professor, Department of Plant Biology, Ecology and Evolution
Oklahoma State University
2024 Associate Professor, Department of Biology, *University of Central Arkansas*
2018-2024 Assistant Professor, Department of Biology, *University of Central Arkansas*
2013-2018 Postdoctoral Fellow, Department of Renewable Resources, *University of Alberta*

EDUCATION

2013 Ph.D., Biology, *University of Pennsylvania, Philadelphia, PA*
2005 B.S., Biology, *University of Michigan, Ann Arbor, MI*

PUBLICATIONS (1786 citations)

† shared first authorship

- Hart, A, SM Landhäusser & **E Wiley** (2024) Tracing carbon and nitrogen reserve remobilization during spring leaf expansion and recovery following defoliation. *Tree Physiology* tpae015, <https://doi.org/10.1093/treephys/tpae015>
- O'Connell, B & **E Wiley** (2024) Heatwaves do not limit short-term recovery following severe defoliation but alter drought tolerance traits of reflush leaves. *Plant, Cell and Environment* 47: 482-96.
- Landhäusser, SM†, **E Wiley**†, SP Kulbaba, AE Goepfel & KA Solarik (2023) The importance of initial seedling characteristics in controlling allocation to growth and reserves under different soil moisture conditions. *Forests* 14(4):796.
- Wiley, E** & A Estes (2023) The impacts of late season defoliation and winter flooding on spring leaf flush and carbohydrate remobilization in pin oak. *Trees* 37: 1069-80.
- McDowell, NG, G Snapes, A Pivovarov, H Adams, CD Allen, WRL Anderegg, M Arend, DD Breshears,..., **E Wiley** & C Xu (2022) Mechanisms of woody plant mortality under rising drought, CO₂, and temperature. *Nature Reviews Earth & Environment* 3:294-308.
- Fermaniuk, C, KG Fleury, **E Wiley** & SM Landhäusser (2021) Large seasonal fluctuations in whole tree carbohydrate reserves: is storage more dynamic in boreal ecosystems? *Annals of Botany* 128: 943-957.
- Hart, A, M Merlin, **E Wiley** & SM Landhäusser (2021) Splitting the difference: heterogeneity of soil moisture availability affects aboveground and belowground reserve and mass allocation in trembling aspen. *Frontiers in Plant Science* 12: 654159.
- Wiley, E** (2020) Do carbon reserves increase tree survival during stress and following disturbance? *Current Forestry Reports* 6: 14-25. (Invited Review)
- Wiley, E**, CM King & SM Landhäusser (2019) Identifying the relevant carbohydrate storage pools available for remobilization in aspen roots. *Tree Physiology* 39:1109–1120.
- Wiley, E**, BJ Rogers, H Griesbauer & SM Landhäusser (2018) Spruce shows greater sensitivity to recent warming than Douglas-fir in central British Columbia. *Ecosphere* 9:e02221.

- Hartmann, H, H Adams, WM Hammond, G Hoch, SM Landhäusser, **E Wiley**, S Zähle (2018) Identifying differences in carbohydrate dynamics of seedlings and mature trees to improve carbon allocation models for trees and forests. *Environmental and Experimental Botany* 152:7-18.
- Weber, R, A Schwendener, S Schmid, S Lambert, **E Wiley**, S Landhäusser, H Hartmann, G Hoch (2018) Living on next to nothing: tree seedlings can survive weeks with very low carbohydrate concentrations. *New Phytologist* 218:107-118.
- Wiley, E**, G Hoch & SM Landhäusser (2017) Dying piece by piece: carbohydrate dynamics in aspen (*Populus tremuloides*) seedlings under severe carbon stress. *Journal of Experimental Botany* 68: 5221-5232.
- Wiley, E**, BB Casper & BR Helliker (2017) Recovery following defoliation involves shifts in allocation that favor storage and reproduction over radial growth in black oak. *Journal of Ecology* 105: 412-424.
- Karst, J, J Gaster, **E Wiley** & SM Landhäusser (2017) Stress differentially causes roots of tree seedlings to exude carbon. *Tree Physiology* 37:154-164.
- Wiley, E**, B Rogers, R Hodgkinson & SM Landhäusser (2016) Nonstructural carbohydrate dynamics of lodgepole pine dying from mountain pine beetle attack. *New Phytologist* 209:550-62.
- Quentin, AG, EA Pinkard, MG Ryan, DT Tissue, LS Baggett, HD Adams, P Maillard, J Marchand, SM Landhäusser, A Lacointe, Y Gibon, W Anderegg, S Asao, OK Atkin,..., **E Wiley** & D Woodruff (2015) Non-structural carbohydrates in woody plants compared among laboratories. *Tree Physiology* 35: 1146–1165.
- Wiley, E**, S Huepenbecker, BB Casper & BR Helliker (2013) The effects of defoliation on carbon allocation: can carbon limitation reduce growth in favor of storage? *Tree Physiology* 33: 1216-28.
- Wiley, E** & BR Helliker (2012) A re-evaluation of carbon storage in trees lends greater support for carbon limitation to growth. *New Phytologist* 195:285-9.

MANUSCRIPTS IN PREPARATION

- Fermaniuk, C, KG Fleurial, **E Wiley**, SM Landhäusser. The role of the bole: constraints in the remobilization of stem reserves under experimental carbon limitation.
- Wiley, E**, CM King, & SM Landhäusser. Root labile carbon pool much older than the carbon remobilized for resprout growth in aspen.
- Nowlin, J, K Johns, **E Wiley**. Carbohydrate availability as a driver of stomatal properties: changes in density and size in response to experimental defoliation.

ORAL & POSTER PRESENTATIONS

Underline indicates presenter, *graduate student, **undergraduate student

International Conferences/Workshops:

- 2023 **Wiley, E** & B O'Connell*. *Heatwaves do not limit short-term recovery following severe defoliation but alter drought tolerance traits of reflush leaves in a deciduous oak*. Oral presentation at the Ecological Society of America Annual Meeting. Portland, OR.
- 2023 Purvis, E*, J. Dunlap* & **E Wiley**. *The effects of fertilization on defoliation recovery in river birch and northern red oak*. Oral presentation at the Ecological Society of America Annual Meeting. Portland, OR.
- 2023 Little, S* & **E Wiley**. *The physiological response of sweetgum (*Liquidambar styraciflua*)*

- to fire restoration management efforts in Central Arkansas. Oral presentation at the Ecological Society of America Annual Meeting. Portland, OR.
- 2023 Nowlin, J**, K Johns**, B O'Connell* & **E Wiley**. *Impacts of defoliation on stomatal properties*. Poster presentation at the Ecological Society of America Annual Meeting. Portland, OR.
- 2023 **Wiley, E**, A Hart* & SM Landhäusser. *Tracing the origin of imported carbon and nitrogen reserves: remobilization during spring leaf expansion and recovery following defoliation*. Poster presentation at the European Geosciences Union General Assembly. Vienna, Austria.
- 2023 Landhäusser, SM, C Fermaniuk*, KG Fleurial*, **E Wiley**. *The role of the bole: constraints in the remobilization of stem reserves under experimental carbon limitation*. Poster presentation at the European Geosciences Union General Assembly. Vienna, Austria.
- 2020 **Wiley, E**. *Is carbon starvation or limitation a mechanism of drought mortality?* Virtual presentation at Drought Mortality Workshop (Zoom).
- 2019 **Wiley, E**, CM King* & SM Landhäusser. *It matters what you measure: Identifying carbohydrate storage pools available for remobilization in aspen*. Oral Presentation at the North American Forest Ecology Workshop, Flagstaff, AZ.
- 2019 Hart, A*, **E Wiley** & SM Landhäusser. *Tracing the fate of carbon and nitrogen reserves: Exploring storage and remobilization in trembling aspen (Populus tremuloides Michx.)*. Oral Presentation at the North American Forest Ecology Workshop, Flagstaff, AZ.
- 2017 **Wiley, E**, P Chow, SM Landhäusser. *Carbohydrate allocation and root growth in mature aspen stands: testing top-down allocation theory and its implications*. Oral presentation at the Ecological Society of America Annual Meeting, Portland, OR.
- 2016 **Wiley, E**, C King, AD Richardson, SM Landhäusser. *Nonstructural carbohydrate remobilization and suckering of aspen roots following severe disturbance*. Invited oral presentation at the American Geophysical Union Fall Meeting, San Francisco, CA.
- 2016 **Wiley, E** & SM Landhäusser. *Dying piece by piece: carbohydrate dynamics in aspen seedlings under severe carbon stress and starvation*. Pico presentation at the European Geosciences Union General Assembly. Vienna, Austria.
- 2014 **Wiley, E**, BJ Rogers, R Hodgkinson & SM Landhäusser. *Nonstructural carbohydrate dynamics of dying lodgepole pines following mountain pine beetle attack*. Oral presentation at Ecological Society of America Annual Meeting, Sacramento, CA.
- 2012 **Wiley, E**, BB Casper & BR Helliker. *Experimental defoliation of black oak: Can storage allocation increase in response to carbon limitation?* Oral presentation at the Ecological Society of America Annual Meeting, Portland, OR.
- 2011 **Wiley, E**, BB Casper & BR Helliker. *Carbon limitation of growth and storage in black oak*. Oral presentation at the Ecological Society of America Annual Meeting, Austin, TX.

Regional Conferences:

- 2024 Purvis, E*, J. Dunlap* & **E Wiley**. *The effects of fertilization on defoliation recovery in river birch and northern red oak*. Oral presentation at the Arkansas Academy of Sciences

- Meeting. Pine Bluff, AR.
- 2024 Nowlin, J**, K Johns** & **E Wiley**. *Carbohydrate availability as a driver of stomatal properties: Defoliation recovery in two bottomland species*. Oral presentation at the Arkansas Academy of Sciences Meeting. Fort Smith, AR.
- 2024 Sobel, H **, E. Purvis* & **E Wiley**. *The interactive effects of defoliation and fertilization on fine root growth and stomatal density: Does fast recovery come at the expense of reduced drought tolerance?* Poster presentation at the Arkansas Academy of Sciences Meeting. Fort Smith, AR.
- 2023 Purvis, E*, J. Dunlap* & **E Wiley**. *The effects of fertilization on defoliation recovery in river birch and northern red oak*. Oral presentation at the Arkansas Academy of Sciences Meeting. Pine Bluff, AR.
Award: Winner 1st place graduate student oral presentation in Wildlife Science and Ecology.
- 2023 Little, S* & **E Wiley**. *The physiological response of sweetgum (*Liquidambar styraciflua*) to fire restoration management efforts in Central Arkansas*. Poster presentation at the Arkansas Academy of Sciences Meeting. Pine Bluff, AR.
Award: Winner 1st place graduate student poster in Wildlife Science and Ecology.
- 2023 Nowlin, J**, K Johns** & **E Wiley**. *Impacts of defoliation on stomatal properties*. Poster presentation at the Arkansas Academy of Sciences Meeting. Pine Bluff, AR.
Award: Winner 2nd place undergraduate student poster in Wildlife Science and Ecology.
- 2022 O'Connell, B* & **E Wiley**. *The interactive effects of spring heatwaves and defoliation on *Quercus palustris* performance*. Poster presentation at the Annual Meeting of Association of Southeastern Biologists. Little Rock, AR.
- 2022 Johns, K**, B O'Connell* & **E Wiley**. *The effects of defoliation and temperature on stomatal density*. Poster presentation at the Annual Meeting of Association of Southeastern Biologists. Little Rock, AR.
- 2022 Dunlap, J*, E Sorge** & **E Wiley**. *The effects of fertilization on carbohydrate remobilization following defoliation in oak and birch* Poster presentation at the Annual Meeting of Association of Southeastern Biologists. Little Rock, AR.
- 2021 Estes, A** & **E Wiley**. *The effects of late-season defoliation and flooding on early spring canopy growth*. Virtual Presentation at the Arkansas Academy of Sciences Meeting.
Award: Winner 1st place undergraduate presentation in Plant Biology/Medical Studies.

AWARDS/FELLOWSHIPS/GRANTS

2013	Dean's Scholar	<i>University of Pennsylvania</i>
2012-13	Dissertation Completion Fellowship	<i>University of Pennsylvania</i>
2011	Dissertation Research Fellowship	<i>University of Pennsylvania</i>
2010	Dean's Award for Distinguished Teaching by Graduate Students	<i>University of Pennsylvania</i>
2020	University Research Council Grant (\$9480)	<i>University of Central Arkansas</i>
2011	Bayard Long Award for Botanical Research (\$600)	<i>Philadelphia Botanical Club</i>
2010	Caroline Thorn Kissel Summer Environmental	<i>Garden Club of America</i>

Studies Scholarship (\$2000)

Advisee Research Funding:

2023, 2021	Delzie Demaree Research Grant (\$4000)	<i>Arkansas Native Plant Society</i>
2023, 2021	Southwestern Energy Research Fellowship (\$3000)	<i>University of Central Arkansas</i>
2021-22	Student Research Fund (\$2829)	<i>University of Central Arkansas</i>
2021	Arkansas Audubon Society Trust Grant (\$500)	<i>Arkansas Audubon Society</i>

Advisee Travel Funding:

2023	Student Travel Awards (\$1000)	<i>Southeast Chapter of ESA</i>
2023	Student Research Fund (\$800)	<i>University of Central Arkansas</i>

TEACHING & MENTORING EXPERIENCE*Instructor, Department of Biology, University of Central Arkansas*

2018-2024	Biol 3403: General Ecology Lecture & Lab
2019-2023	Biol 4450/5450: Plant Ecophysiology Lecture & Lab
2020	Biol 6443: Advanced Ecology (<i>graduate level</i>)
2021-2023	Biol 6V95: Special Topics in Biology: Climate Change (<i>graduate level</i>)

Teaching Assistant, Department of Biology, University of Pennsylvania

2007, 2009	Biol 102: Introduction to Biology II
2008, 2009	Biol 124: Introductory Organismal Biology Lab
2011	Biol 230: Evolutionary Biology
2010, 2011	Biol 240: Ecology: From Individuals to Ecosystems
2012	Biol 556: Advanced Statistics (Graduate Course)

Undergraduate research students at UCA (10) (presentations, theses, awards):

- **Hannah Hayes** (Su 2024) “Effects of defoliation on fine root carbohydrate reserves”
- **Harper Sobel** (Sp 2024) “Effects of fertilization and defoliation on drought resistance” Arkansas Academy of Sciences (AAS) Poster Presentation.
- **Emma Busted** (F 2023-current) *Honors Thesis in Progress*: “Effects of warming temperatures on shade tolerance”
- **Jacob Nowlin** (Sp 2023-current) AAS Oral Presentation, AAS and CNSM Poster Presentations. Ecological Society of America (ESA) Poster Author. *Biology Honors Thesis in Progress*: “The Effects of Defoliation on Stomatal Properties” **UCA and ESA Student Travel Fund Awards, AAS Poster Award**
- **Symia Buford** (Su 2023)
- **Emiley Sorge** (Sp 2021-Sp 2022) *Biology Honors Thesis*: “Effects of Fertilization on Defoliation Recovery in River Birch and Northern Red Oak”. CNSM Poster. **Student Research Fund Award**.
- **Kai Johns** (F 2020-Sp 2021, F 2023) Association of Southeastern Biologists (ASB) and CNSM Poster Presentation
- **Ashlyn Estes** (F 2020-Sp 2021) AAS and CNSM Virtual Presentations. **AAS Presentation Award**.
- **Shelby Ramsey** (Sp 2020) AAS abstract (cancelled due to Covid)
- **Madeline Stagg** (Sp 2020) AAS abstract (cancelled due to Covid)

- **Kesiya Rony** (Su 2019, Sp 2020) AAS abstract (cancelled due to Covid)

Graduate students at UCA

- **Emiley (née Sorge) Purvis** (MS conferred 2024) **SWN Award & Arkansas Native Plant Society Research Grant**; AAS and ESA oral presentations. **AAS: 1st place graduate presentation in Wildlife Science & Ecology**; *Thesis*: The effects of fertilization on defoliation recovery in river birch (*Betula nigra*) and northern red oak (*Quercus rubra*).
- **Sam Little** (MS conferred 2023) **SWN & Student Research Fund Awards, Arkansas Native Plant Society and Arkansas Audubon Society Research Grants, ESA travel grant**; AAS poster, ESA and Arkansas Audubon Society oral presentations. **AAS: 1st place graduate poster in Wildlife Science & Ecology, GTA Teaching Award Nominee**; *Thesis*: The physiological response of sweetgum to fire restoration management efforts in Central Arkansas.
- **Benjamin O'Connell** (MS conferred 2022) **Student Research Fund Award**; ASB poster presentation. *Thesis*: The interactive effects of defoliation and heatwaves on pin oak performance and drought tolerance.
- **Joseph Dunlap** (non-thesis MS conferred 2022) ASB poster presentation. *Independent Research Project*: Fertilization effects on carbohydrate remobilization following defoliation in birch and oak.

Co-advised graduate students at University of Alberta:

- **Coral Fermaniuk** (MS Land Reclamation and Remediation conferred 2023) *Thesis*: Investigating C reserve phenology and remobilization under C limitation in boreal *Betula papyrifera*.
- **Ashley Hart** (MS Land Reclamation and Remediation conferred 2021) *Thesis*: Resource partitioning, allocation, and remobilization in trembling aspen saplings.
- **Carolyn King** (MS Land Reclamation and Remediation conferred 2017) *Thesis*: Regeneration dynamics of seedling-origin aspen: implications for forest reclamation.

Honors/Graduate Thesis Committee Member at UCA (8)

- John Cook, Donovan Clark, Seth Dixon, Kira Gibbs, Samuel Hoggard, Sarah Martin, Anthony Pignatelli, Julia Roberson

Undergraduate Honors Thesis Committee Member at UCA (4)

- Christopher Struck, Mackenzie Hoogshagen, Alexis Villalobos, Cameron Heslip

SERVICE

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| 2012-current | Reviewer: Annals of Botany, Fire Ecology, New Phytologist, Oecologia, Perspectives in Plant Ecology Evolution and Systematics, Tree Physiology, Trees, US NSF External Review |
| 2019 | Co-organizer: <i>Tree response to stress and disturbance: linking physiological mechanisms, consequences, and predictions for a changing climate</i> . Oral Session at the North American Forest Ecology Workshop. Flagstaff, AZ. |
| 2012 | Principal Organizer: <i>Carbon or sinks: The causes of tree growth limitation</i> . Oral Session at the Ecological Society of America Annual Meeting. Portland, OR. |

REFERENCES

Dr. Simon Landhäusser
Department of Renewable Resources, University of Alberta
simon.landhausser@ualberta.ca

Postdoc advisor

Dr. Brent Helliker
Department of Biology, University of Pennsylvania
helliker@sas.upenn.edu

Ph.D. advisor

Dr. Brenda B. Casper
Department of Biology, University of Pennsylvania
bcasper@sas.upenn.edu

Ph.D. co-advisor