

Alec S. Baird

PhD Candidate

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- Research** Comparative and phylogenetic leaf development, anatomy and ecophysiology:
- Physiological mechanisms underlying species climate adaptation
 - Allometry of leaves from cells to tissues, from tissues to morphologies
 - Modeling expansive cell and leaf growth physiology with anatomy, hydraulics, and metabolism
 - Anatomical mechanisms underlying physiological differences and thresholds (C₃ vs. C₄ grasses, intra- versus inter- specific trait variation (stress tolerance traits), species coexistence)
 - Experimental investigation of leaf level developmental plasticity
- Employment**
- | | |
|---|----------------|
| Teaching assistant , Dept. of Ecology & Evolutionary Biology, UCLA | 2018 – present |
| Research biologist , Adaptive Symbiotic Technologies, Seattle, U.S. | 2016 – 2017 |
| Post-baccalaureate researcher , Dept. of Biology, UW, Seattle, U.S. | 2016 – 2017 |
| Data technician , Dr. Jerry Franklin Lab, SEFS, UW, Seattle, U.S. | 2015 – 2016 |
| Undergraduate researcher , Dr. Janneke HilleRisLambers Lab, Dr. Elizabeth Van Volkenburgh Lab, Dept. of Biology, UW, Seattle, U.S. | 2014 – 2016 |
- Education**
- | | |
|--|------------------------|
| University of California, Los Angeles , PhD, Advisor: Dr. Lawren Sack | 2017 – 2023 (expected) |
| Dissertation: Integrating leaf development, structure and physiology to unravel insights and mechanisms of eco-evolutionary adaptation of leaves | |
| University of Washington, Seattle , BS, Plant biology; Minor, French | 2012 – 2016 |
- Publications** * = equal contribution, † = undergraduate researcher
9. **Baird AS**, Taylor SH, Reddi S†, Pasquet-Kok J, Vuong C, Zhang Y, Watcharamongkol T, Scoffoni C, Edwards EJ, Osborne C, Sack L. Grass leaf allometry: linking leaf development, structure and function. *In preparation*
 8. Liu C, Li Y, Zhang J, Xu L, Li M, **Baird AS**, Sack L, Yu G, He N. Leaf stomatal traits and pore allometry in forests. *In preparation*
 7. **Baird AS**, Taylor SH, Pasquet-Kok J, Vuong C, Zhang Y, Watcharamongkol T, Scoffoni C, Edwards EJ, Christin P-A, Osborne C, Sack L. Hydraulic adaptation in grasses: hyper-efficient water transport enables the high photosynthetic performance of C₄ grasses. *In preparation*
 6. Lu H-Z, Chen Q, Liu W-Y, Mo Y-X, Song L, Douhovnikoff V, Wu Y, Zhang L-M, **Baird AS**, Wang, Z-J, Yu F-H. Effects of clonal fragmentation level and ramet age on the performance of three clonal epiphytes. *In Revision*
 5. **Baird AS**, Taylor SH, Pasquet-Kok J, Vuong C, Zhang Y, Watcharamongkol T, Scoffoni C, Edwards EJ, Christin P-A, Osborne C, Sack L. (2021) Developmental and biophysical determinants of grass leaf size worldwide. *Nature*. doi: <https://dx.doi.org/10.1038/s41586-021-03370-0>
 - Featured by UCLA Newsroom: <https://newsroom.ucla.edu/releases/grass-blades-climate-change>
 4. Liu C, Li Y, Zhang J, **Baird AS**, He N. (2020) Optimal community assembly related to leaf economic-hydraulic-anatomical traits. *Frontiers in Plant Science*. doi: <https://doi.org/10.3389/fpls.2020.00341>
 3. Rodriguez R, **Baird AS**, Cho S, Gray Z, Groover E, Harto R, Hsieh M, Malmberg K, Manglona R, Mercer M, Nasman N, Nicklason T, Rienstra M, Van Inwegen A, VanHooser A, Redman R. (2019) Mitigating climate impacts on crop production via symbiosis, in *Endophyte Biotechnology: potential for agriculture and pharmacology*, pp. 59-67. Cabi. doi: <https://doi.org/10.1079/9781786399427.0059>

2. Rodriguez R, **Baird AS**, Batson A, Cho S, Gray Z, Harto R, Hsieh M, Malmberg K, Manglona R, Mercer M, Nasman N, Nicklason T, Rienstra M, Van Inwegen A, VanHooser A, Redman R (2019) Programming plants for climate resilience through symbiogenics, in *Seed Endophytes*, pp. 127 – 137. Verma, S., White, Jr J. Springer, Cham. doi: https://doi.org/10.1007/978-3-030-10504-4_7

1. **Baird AS**, Anderegg LDL, Lacey ME, HilleRisLambers J, Van Volkenburgh E. (2017) Comparative leaf growth strategies in response to low-water and low-light availability: Variation in leaf physiology underlies variation in leaf mass per area (LMA) in *Populus tremuloides*. *Tree Physiology*. 37:1140-1150. doi: <https://doi.org/10.1093/treephys/tpx035>

Grants	Conference travel grant (\$1000), The Graduate Division, UCLA	2018
	Conference travel grant (\$850), Undergraduate Research Program, UW	2015
	Research grant (\$1000), Washington State Nursery and Landscape Association	2015
	Travel grant (\$575), The American Society of Plant Biologists	2015
	Summer grant in field botany (\$2,500), The Garden Club of America	2015
Awards & Honors	Dissertation year fellowship (3 quarters funding), The Graduate Division, UCLA.	2022
	Excellence in research, PhD Candidate , Life Sciences, UCLA (\$500)	2022
	Conference award (\$200), Dept. of Ecology & Evolutionary Biology, UCLA	2021
	1st Place best graduate research poster (\$250 amazon gift card), Dept. of Ecology & Evolutionary Biology, UCLA	2021
	Quarter fellowship (\$7500 + fees/tuition), Dept. of Ecology & Evolutionary Biology, UCLA	2021
	Conference award (\$200), Dept. of Ecology & Evolutionary Biology, UCLA	2020
	Research award (\$400), Dept. of Ecology & Evolutionary Biology, UCLA	2020
	Quarter fellowship (\$7000 + fees/tuition), Dept. of Ecology & Evolutionary Biology, UCLA	2019
	Conference travel award (\$1200), Dept. of Ecology & Evolutionary Biology, UCLA	2019
	Research award (\$2000), Dept. of Ecology & Evolutionary Biology, UCLA	2019
	Honorable mention , National Science Foundation Graduate Research Fellowship	2019
	Conference travel award (\$500), Dept. of Ecology & Evolutionary Biology, UCLA	2018
	2nd Place best research poster (\$150), Dept. of Ecology & Evolutionary Biology, UCLA	2018
	University fellowship (\$3000), The Graduate Division, UCLA	2017
	Edwin W. Pauley fellowship (\$30,000), College of Letters and Science, UCLA	2017
Franco award, best undergraduate research paper (\$3,000), Dept. of Biology, UW	2016	
Academic scholarship (\$1,000), Washington State Nursery and Landscape Association	2015	
Frye-Hotson-Rigg award (\$2,400), Dept. of Biology, UW	2015	
Mary Gates research endowment (\$4,000), UW	2015	

Presentations * = presenting author; † = undergraduate researcher

15. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Edwards EJ, Osborne CP, Sack L. The hydraulic adaptation of grasses with contrasting photosynthetic pathways. **Contributed Poster Presentation June 2022**: Gordon Research Conference: Multiscale Plant Vascular Biology, Sunday River, Maine

14. **Baird AS***, Medeiros C, Buckley T, Sack L. Developmental basis of leaf trichome density. **Contributed Poster Presentation, May 2021**: Department of Ecology and Evolutionary Biology Research Symposium, UCLA, CA, U.S.

13. Reddi S*†, **Baird AS**, Sack L. Modeling the energy balance of angiosperm leaves. **Contributed Poster Presentation, May 2021**: Department of Ecology and Evolutionary Biology Research Symposium, UCLA, CA, U.S. **Contributed Oral Presentation, May 2021**: Undergraduate Research Week Showcase, UCLA, CA, U.S.

12. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Edwards EJ, Christin P-A, Osborne CP, Sack L. Developmental and biophysical determinants of grass leaf size worldwide. **September 2021**: UCLA Plant Biology Seminar Series

11. Reddi S*†, **Baird AS**, Sack L. Allometries underlying grass leaf size. **Contributed Poster Presentation, May 2021**: Department of Ecology and Evolutionary Biology Research Symposium, UCLA, CA, U.S. **Contributed Oral Presentation, May 2021**: Undergraduate Research Week Showcase, UCLA, CA, U.S.
10. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Edwards EJ, Osborne CP, Sack L. Resolving the paradox of leaf vasculature in C₄ grasses: does high vein density drive high hydraulic conductance and photosynthesis? **Contributed Poster Presentation, May 2021**: Department of Ecology and Evolutionary Biology Research Symposium, UCLA, CA, U.S.
9. **Baird AS***. Integrating leaf development, structure and physiology to unravel insights and mechanisms of eco-evolutionary adaptation of leaves. **Invited Guest Lecture, February 2021**: California State University Los Angeles (CSULA) Biol 4300: Fundamental Research in Plant Ecological Physiology.
8. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Edwards EJ, Christin P-A, Osborne CP, Sack L. Developmental basis for the worldwide climatic distribution of grass leaf size. **Contributed Poster Presentation, July 2020**: Botany 2020., **August 2020**: Ecological Society of America (ESA) Conference
7. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Edwards EJ, Christin P-A, Osborne CP, Sack L. Developmental scaling of venation architecture in grasses underlies worldwide leaf size distribution. **Contributed Oral Presentation, May 2019**: UCLA Department of Ecology and Evolution Biology: EcoEvo Pub, UCLA, CA, U.S., **August 2019**: American Society of Plant Biologists: Plant Biology 2019, San Jose, CA, U.S., **January 2020**: UCLA Plant Biology Seminar Series
6. **Baird AS***, Taylor SH, Pasquet-Kok J, Vuong C, Zhang T, Watcharamongkol T, Scoffoni C, Diener AC, Edwards EJ, Christin P-A, Osborne CP, Sack L. Size scaling of vein architecture across C₃ and C₄ grasses. **Contributed Poster Presentation, May 2018**: Department of Ecology and Evolutionary Biology Research Symposium (awarded 2nd best poster, \$150 prize), UCLA, CA, U.S. **June 2018**: Gordon Research Conference: Multiscale Plant Vascular Biology, Mt. Snow, VT
5. **Baird AS***, Anderegg LDL, Lacey ME, HilleRisLambers J, Van Volkenburgh E. Comparative Leaf Growth Strategies in Response to Low-Water versus Low-Light Availability: Variation in Leaf Physiology Underlies Variation in Leaf Mass per Area. **Contributed Poster Presentation, August 2017**: Ecological Society of America (ESA) Conference, Portland, U.S.
4. Van Volkenburgh E*, **Baird AS**, Lacey ME, Rininger A, Cantillo-Polo J. Mechanisms of Behavior in Plants. **Invited Oral Presentation, June 2017**: Plant Signaling and Behavior (PSB) Conference, Matsue, Japan
3. **Baird AS***, Anderegg LDL, Lacey ME, HilleRisLambers J, Van Volkenburgh E. Comparative Leaf Growth Strategies in Response to Low-Water versus Low-Light Availability: How Form Influences Function in *Populus tremuloides*. **Contributed Oral Presentation, May 2016**: Undergraduate Research Symposium, UW, Seattle, U.S.
2. **Baird AS***, Anderegg LDL, Lacey ME, HilleRisLambers J, Van Volkenburgh E. Climatic and Competitive Constraints Drive Clinal Variation in *Populus tremuloides* Leaf Morphology. **Contributed Poster Presentation, May 2015**: Undergraduate Research Symposium, UW, Seattle, U.S., **July 2015**: Plant Biology (ASPB) Conference, Minneapolis, U.S., **August 2015**: Ecological Society of America (ESA) Conference, Baltimore, U.S.
1. **Baird AS***, Kroiss S, HilleRisLambers J. Sapling Growth Across an Elevational Gradient: Implications of Climate Change Responses. **Contributed Poster Presentation, April 2014**: National Conference of Undergraduate Research, Eastern Washington University (**Invited & Declined**), **May 2014**: Undergraduate Research Symposium, UW, Seattle, U.S.

Activities	<p>Podcast Interviewee, Agriculture, GMOs and Plant physiology 2021 https://anchor.fm/dragonfruit/episodes/Alec-Baird-Agriculture--GMOs--and-Plant-Physiology-epuo14</p> <p>Mildred E. Mathias Botanic Garden Docent, UCLA 2019 – present</p> <p>Quarterly Plant Biology Seminar: Drought and Plant Physiology, UW 2016 – 2017</p> <p>Undergraduate Modeling Workshop, SAMSI, NCSU, Raleigh NC 2015</p> <p>Biology 180 (1 Intro. Biology Course) Rebooting Concepts in Ecological Seminar, UW 2015</p> <p>Quarterly Plant Biology Seminar: Photosynthesis, UW 2014 – 2015</p>
Society Member (past and present)	<p>British Ecological Society (BES)</p> <p>Society of Plant Signaling and Behavior (PSB)</p> <p>Cactus and Succulent Society of America (CSSA)</p> <p>Ecological Society of America (ESA)</p> <p>American Society of Plant Biologists (ASPB)</p> <p>Union of Concerned Scientists (UCS)</p>
Peer Reviewer	<p>Total Publications Reviewed: 13; Annals of Botany (1), AoB Plants (1), Ecography (1), Ecology and Evolution (1), Ecology Letters (1) Frontiers in Plant Science (1), Journal of Plant Ecology (1), Journal of Plant Physiology (1), Nature Scientific Reports (1), New Phytologist (1), Plant Biology (1), Plant Ecology (1), ScienceAsia (1)</p> <p>Note: the # in “()” indicates the number of manuscripts reviewed per journal</p>
Teaching	<p>Teaching assistant, EEB 100L Ecology and Behavior Lab, UCLA Winter 2021</p> <p>EEB 116 Conservation Biology, UCLA Fall 2020</p> <p>Fall 2019</p> <p>EEB 162L Plant Physiology and Ecophysiology Lab, UCLA Spring 2022</p> <p>Summer 2021</p> <p>Spring 2021</p> <p>Summer 2020</p> <p>Spring 2020</p> <p>Summer 2019</p> <p>Spring 2018</p>
Mentoring	<p>Jaskarn Batth (UCLA), Thomas Condon (UCLA), Caroline Pohl (UCLA), Sachin Reddi (UCLA), Emiliano Ybarra (UW), Luc Zelissen (UCLA), Jason Zhao (UCLA)</p>