

SOREN STRUCKMAN

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A. Professional Preparation

Utah State University, Logan, UT January 2021 – Present
Doctor of Philosophy in Ecology

College of William & Mary, Williamsburg, VA August 2015 – January 2019
Bachelor of Science in Biology
Minor: Computational/Applied Math & Statistics GPA: 3.93 (*Summa Cum Laude*)

B. Research Experience

Western Forest Initiative, *USU Wildland Resources Department* January 2020 – January 2021

- Lead analysis investigating patterns of woody biomass evolution in western old-growth forests and the role of large-diameter tree mortality following fire, beetle outbreak, and wind events, using large-scale permanent research plots – 3 second-author publications.
- Evaluate and employ various tree biomass estimation methods for large and diverse long-term demographic datasets.
- Train and supervise field crews in implementing forest-ecological field methods – tree growth/mortality surveys and assessments, seedling and recruitment surveys, Brown's fuel transects, soil sampling, dendrochronological sampling, mapping trees and woody debris.

Quantitative Biology Lab, *William & Mary Biology Department* January 2016 – March 2019

- Conduct and interpret statistical data analysis ~ ANOVA, ordination, cluster analysis, Monte Carlo procedures, linear mixed-effects and Bayesian models, distribution fitting, functional programming, and population dynamic models (Integral Projection, Matrix, Individual/agent-based models).
- Oversee cleaning, storage, and organization of long-term biological/ecological datasets.
- Generate high-quality graphical products for publication and data visualization.
- Investigate new model validation methods and software tools.

Plant Ecology Lab, *William & Mary Biology Department* August 2016 – March 2019

- Carry out forest demography fieldwork including mortality and recruitment monitoring, stem mapping, seedling surveys, height/DBH measurement, canopy composition, and disease/damage assessment in eastern deciduous forest (*Castanea dentata*).
- Conduct herbaceous plant studies (*Asclepias syriaca*), including demographic data collection, leaf spectral analysis, vegetation cover assessment, insect herbivory characterization, and plant identification.
- Locate sources of funding, write grant proposals, reports, and academic publications (1 first author, 1 second author) for submission to leading ecological journals. Oral presentation of scientific results to a broad audience (2 local/regional, 1 national, 1 international conference).
- Train and supervise new lab members to follow field collection procedures and protocols.

C. Refereed Publications

Dagleish, HJ, AAR Kula, SS Yair, I Munkres, J Mutterperl, S Struckman, and MD LaMar. (2024). Herbivory as a continuous state variable in an IPM: Increasing herbivory decreases population growth of *Asclepias syriaca* through its effects on clonal reproduction. *Perspectives in Plant Ecology, Evolution and Systematics*, **62**.

- Birch, JD, JA Lutz, S Struckman, JR Miesel, and J Karst. (2023). Large-diameter trees and deadwood correspond with belowground ectomycorrhizal fungal richness. *Ecological Processes*, **12**: 1.
- Lutz, JA, S Struckman, SJ Germain, and TJ Furniss. (2021). The importance of large-diameter trees to deadwood biomass. *Ecological Processes*, **10**: 28.
- Lutz, JA, S Struckman, TJ Furniss, JD Birch, LL Yocom, and DJ McAvoy. (2021). Large-diameter trees, snags, and deadwood in southern Utah, USA. *Ecological Processes*, **10**: 9.
- Lutz, JA, S Struckman, TJ Furniss, CA Cansler, SJ Germain, LL Yocom, DJ McAvoy, CA Kolden, AMS Smith, ME Swanson, and AJ Larson. (2020). Large-diameter trees dominate snag and surface biomass following reintroduced fire. *Ecological Processes*, **9**: 41.
- Struckman, S, JJ Couture, MD LaMar, and HJ Dalglish. (2019). The demographic effects of functional traits: an integral projection model approach reveals population-level consequences of reproduction-defense trade-offs. *Ecology Letters*, **22**: 1396–1406.

D. Grants and Awards

2021	Graduate Research Fellowship, National Science Foundation (\$148,000)
2019	MCED Award for Innovative Contributions to Ecological Modelling (2 nd Prize)
2018	Committee on Sustainability Research Grant, College of William & Mary (\$5,500)
2018	Roy R. Charles Center Summer Research Grant (\$3,000, awarded but declined by recipient)
2018	Elizabeth Gardner Norweb Environmental Studies Scholarship, Garden Club of America (\$3,000)
2018	Student Conference Travel Grant, College of William & Mary (\$300)
2018	Plant Population Ecology Student Travel Award, Ecological Society of America (\$200)
2017	Roy R. Charles Center Summer Research Grant (\$3,000)
2017	Mary T. Carothers Environmental Studies Scholarship, Garden Club of America (\$3,000)
2017	Virginia Crouch Memorial Scholarship in Field Botany, College of William & Mary (\$1,000)
2016	First-Year Research Fellowship, Howard Hughes Medical Institute (\$250)
2015	Matthew B. Greene Educational Scholarship (\$500)
	Total \$167,750

E. Professional Presentations (presenter underlined)

- S Struckman. 2024. Competition and climate effects on tree growth in spruce-fir-aspen forests. **USU Graduate Research Symposium**. 19 April 2024, Logan, Utah.
- Struckman, S. 2022. How fire is changing the Yosemite Forest Dynamics Plot. **Smithsonian ForestGEO Seminar Series**. 17 August 2022, Live Broadcast. (*Invited*)
- Struckman, S. 2022. California black oak demographic responses to reintroduced fire. **USU Graduate Research Symposium**. 15 April 2022, Logan, Utah.
- Dalglish, HJ, S Struckman, MD LaMar, and JJ Couture. 2018. Linking individual variation in plant functional traits to demography using a trait-based integral projection model. **2nd Joint Congress on Evolutionary Biology**. 19-22 August 2018, Montpellier, France.
- Struckman, S, MD LaMar, JJ Couture, and HJ Dalglish. 2018. Linking individual variation in plant functional traits to demography using a trait-based integral projection model. **103rd Annual Meeting of the Ecological Society of America**. 5-10 August 2018, New Orleans, Louisiana.
- Dalglish, HJ, SS Yair, S Struckman, AR Kula, and MD LaMar. 2018 Herbivory as a continuous state variable in an IPM: Herbivory and clonal reproduction drive population growth rate in *Asclepias syriaca*. **103rd Annual Meeting of the Ecological Society of America**. 5-10 August 2018, New Orleans, Louisiana.
- Struckman, S, JJ Couture, MD LaMar, and HJ Dalglish. Effects of growth-defense trade-offs on population growth rate in *Asclepias syriaca*: a trait-based Integral Projection Model. **Ecological Society of America, Mid-Atlantic Chapter Meeting**. 7 April 2018, Newark, NJ.

Dalgleish, HJ, SS Yair, S Struckman, AR Kula, and MD LaMar. Herbivory as a continuous state variable in an IPM: increasing variance in damage among plants increases population growth rate. **Ecological Society of America, Mid-Atlantic Chapter Meeting**. 7 April 2018, Newark, NJ.

Struckman, S. Modeling Herbivory and Leaf Trait Effects on Milkweed Population Dynamics. **College of William & Mary Summer Research Symposium**. 14 September 2017, Williamsburg, VA.

F. Professional Workshops

Instructor. 2021-2024. Data science workshop series. Ecology Center, Utah State University.

- *Intro to Data Visualization with ggplot*. Mar. 4, 2024.
- *Intro to Data Wrangling with the tidyverse*. Feb. 26, 2024.
- *Intro to Data Visualization with ggplot*. Feb. 21, 2023.
- *Intro to Data Wrangling with the tidyverse*. Feb. 14, 2023.
- *Intro to Data Visualization with ggplot*. Oct. 11, 2022.
- *Intro to Data Wrangling with the tidyverse*. Sep. 28, 2022.
- *Visualizing Spatial Data in R*. Apr. 13, 2022.
- *Intro to Data Visualization with ggplot*. Mar. 15, 2022.
- *Intro to Data Wrangling with the tidyverse*. Feb. 23, 2022.
- *Intro to Data Visualization with ggplot*. Dec. 3, 2021.

Mentor. 2021-2024. National Science Foundation Graduate Research Fellowship writing workshop series. Science Writing Center, Utah State University.

Participant. 2023. Analyzing tree-ring data in non-traditional ways to answer ecological questions. Tree-Ring Laboratory, University of Arizona (supported by NSF Macrosystems Biology NSF MSB 1802893).

Participant. 2019. Longleaf Academy: Longleaf 101. The Longleaf Alliance.

G. Skills & Certifications

Wilderness First Responder (certified Apr. 2021 – Nov. 2025; previously WFA since Jan. 2018)

Wildland Firefighter Type II (*courses*: S110/ S130/S190/L180/ICS100/ ICS700)

Remote Pilot License – Small Unmanned Aircraft Systems

Driver's License – clean driving record, UTV/ATV/towing operations

Plant Identification by sight and using a *Flora*

(experience in USA – Northeast, Mid-Atlantic, Sierra Nevada, Cascade Range, Colorado Plateau)

Collection and preparation of herbarium specimens

Herbicide application for invasive species control

Advanced woodworking, basic metalworking/electrical/plumbing

Proficient backcountry navigation, orienteering, and travel

German language proficiency – writing, reading, and speaking

Software: R, ArcGIS, Python, ESRI Collector, MatLab, NetLogo, ImageJ, AutoDesk, Avenza Maps

Instrumentation: GPS, field spectroradiometer, environmental sensors, Haglöf mapping equipment

Equipment: chainsaw, tractor (combine / 0-turn), water pumps and spray systems, small boats, backhoe

H. Work Experience

Teaching Assistant, *USU Wildland Resources Department*

August 2022 – December 2022, August 2023 – December 2023

- “Forest Plants: Identification, Biology, and Function” – 30 students
- Teach weekly labs covering material on plant morphology, ecology, and identification skills
- Hold weekly review sessions and manage all student grades

Field Technician, *Western Forest Initiative – Utah State University* June 2019 – September 2019

- Survey large-scale (90,000+ stems) old-growth forest demography in the Sierra Nevada, Cascade Range, and Colorado Plateau – tree growth, recruitment and mortality
- Establish permanent long-term forest monitoring plots, map live and downed woody plants
- Identify causes of woody plant mortality – physical/chemical stress & fungal/insect pathogens
- Service environmental sensors, electronic and manual dendrometers, and seed/litter traps

Stewardship Technician, June 2018 – January 2020

VA Dept. Conservation and Recreation – Division of Natural Heritage

- Conduct habitat assessments and inventories for rare and listed flora and/or communities
- Apply prescribed fire for longleaf pine restoration and wildlife habitat enhancement
- Assist in monitoring and maintenance of state natural area preserves
- Write management reports and documents and maintain records databases

Teaching Assistant, *William & Mary Biology Department* August 2017 – January 2018

- “Introduction to Organisms, Ecology, and Evolution” – 150 students
- Enhance class instruction through independent office hours and 1-on-1 student tutoring, grading of course assignments and in-class demonstrations/activities

Ski Instructor/ Ropes Facilitator, *Blue Mountain Ski Area* December 2011 – December 2019

- Monitor skill development related to skiing in students ages 4-14
- Conduct zip line, ropes course, climbing wall, and laser tag operations
- Facilitate team building activities and events for children/adults
- Cultivate an appreciation for nature and sustainable practices (i.e. Leave No Trace)

Surveyor’s Aid, *Van Cleef Engineering Associates* June 2016 – August 2016

- Assist surveyor with site assessment for topographical mapping, and transportation and operation of survey equipment
- Perform construction site stake-out work for surveyor

I. Other Experience

- Independently designed, wrote, and submitted a conceptual restoration plan to a potential consulting client and was invited for follow up discussions regarding the project. Client is currently using it to guide future management decisions.
- Experience cultivating plants and soils through farming and semi-professional landscaping.