Daniel L. Perret
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ORISE Postdoctoral Research Fellow
Pacific Northwest Research Station
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Education

Ph. D., *January 2022*
Department of Ecology, Evolutionary & Organismal Biology
Brown University

B. S., *June 2013*
Biology (Ecology and Evolutionary Biology, *with Honors*)
Stanford University

Research Interests

My work seeks to understand and predict the dramatic ways that human actions are altering the planet's ecology, with the goal of improving conservation and management outcomes. My current research leverages large-scale forest inventory data, tree-ring records, non-native distributions, and ecological niche theory to investigate the future of western North American forests in light of changing climatic and disturbance regimes. I do much of my work using a combination of dendroecological field research, statistical analyses in R, and various geospatial data platforms.

Research Positions

Postdoctoral Research Fellow – Oak Ridge Institute for Science & Education
United States Forest Service Pacific Northwest Research Station
February 2022 – present

Supervised by Harold Zald, David Bell, and Andrew Gray. Funded projects include subalpine fir status and trends assessments, sugar pine climate and disturbance vulnerability modeling, and methods comparisons for forest disturbance detection. Extensive R-based analysis of FIA, ADS, FHP, and tree-ring data.

Doctoral Candidate – Brown University
September 2016 – January 2022
Dissertation title: *Niche-Based Perspectives on Species' Vulnerability to Climate Change: Pines as a Multi-Scale Case Study*
Dissertation Committee: Prof. Dov F. Sax (*primary advisor; Brown University*), Prof. Jon Witman (*Brown University*), Prof. Margaret Evans (*University of Arizona*), Prof. Andrew Leslie (*Stanford University*)

Spatial Analysis and Remote Sensing Technician – *University of Montana*
September 2014 – June 2016
> Collaborative project with the Sage Grouse Initiative, US Fish & Wildlife Service, and University of Montana Avian Science Center modeling mesic habitat availability for Greater Sage Grouse. Analysis of Landsat imagery using ERDAS Imagine, eCognition, ArcGIS, and Python resulted in publication and an online mapping platform: https://map.sagegrouseinitiative.com/ecosystem.

Research Technician – *Yellowstone Wolf Project / Yellowstone Cougar Project*
June 2013 – September 2014
> Backcountry fieldwork including wildlife necropsies, radiotelemetry tracking, behavioral observation, non-invasive genetic sampling, and remote camera work. Additional duties communicating wildlife science to park visitors.

Publications

Perret, D. L., M. E. K. Evans, D. F. Sax. 2023. A species' response to spatial climatic variation does not predict its response to climate change. *PNAS*.

Perret, D. L., D. M. Bell, A. N. Gray, J. D. Shaw, H. S. J. Zald. 2023. Range-wide population assessments for subalpine fir indicate widespread disturbance-driven decline. *Forest Ecology & Management.*

Perret, D. L., & D. F. Sax. 2021. Evaluating alternative study designs for optimal sampling of species' climatic niches. *Ecography.*

Rosenblad, K., **D. L. Perret**, D. F. Sax. 2019. Niche syndromes reveal climate-driven extinction threat to island endemic conifers. *Nature Climate Change*.

Perret, D. L., A. B. Leslie, & D. F. Sax. 2019. Naturalized distributions show that climatic disequilibrium is structured by niche size in pines (*Pinus* L.). *Global Ecology & Biogeography*.

Donnelly, P. J., B. W. Allred, **D. L. Perret**, N. L. Silverman, J. D. Tack, V. J. Dreitz, & D. E. Naugle. 2019. Seasonal drought in North America's sagebrush biome structures dynamic ecological minimums for sage-grouse. *Ecology & Evolution*.

Grants

Does ecological niche theory predict tree performance in exotic communities and climates? Doctoral Dissertation Enhancement Grant, The Bushnell Graduate Research & Education Fund. January 2020. Award amount: $9935

Reading between the rings: the climate future of North American pines. Graduate Research, Travel & Training Grant, Institute at Brown for Environment and Society. January 2020. Award amount: $4596

Assessing climate-driven extinction risk by measuring population performance of North American pines. Lewis and Clark Fund for Exploration and Field Research, The American Philosophical Society. May 2018. Award amount: $4000

Assessing climate-driven extinction risk by measuring the population performance of pines. Graduate Research, Travel & Training Grant, Institute at Brown for Environment and Society. January 2018 – September 2018. Award amount: $4977

Spatial distribution, environmental change, and morphological variation in the mountain beaver (Aplodontia rufa). Stanford University Undergraduate Advising and Research Small Grant. May 2011 – September 2011. Award amount: $2600

Talks, Posters, & Workshops

Forest Inventory Data for Global Change Ecology: Opportunities, Challenges, and Innovations. Organizer for organized oral session at Ecological Society of America. Portland, OR. August 2023.

An Introduction to Estimating Ecological Change with the US Forest Service Forest Inventory and Analysis (FIA) Database. Organizer for workshop at Ecological Society of America. Portland, OR. August 2023.

Interactions between climate and disturbance are driving widespread subalpine fir decline. FIA Stakeholder Science Meeting. November 2022.

Interactions between climate and disturbance are driving widespread subalpine fir decline. MtnClimate. Crested Butte, CO. September 2022.

Population-specific responses determine species' vulnerability to climate change: a spatiotemporal case study of ponderosa pine. Ecological Society of America. Montreal, Canada. August 2022.

Tree ring records reveal that climate envelope approaches underestimate population vulnerability to climate change. International Biogeography Society. Vancouver, Canada. January 2022.

Niches, tree-rings, and invasive forests. Brown University EEOB Departmental Seminar. Dec 2020.

Tree rings and niche models as tools for predicting forest responses to climate change. Earth, Itself. Brown University. March 2019. (poster)

Is all niche space created equal? A framework for exploring the structure of the niche. International Biogeography Society. Malaga, Spain. Jan 2019. (poster)

Climatic disequilibrium is structured by niche size. International Biogeography Society, Climate Change Biogeography. Evora, Portugal. March 2018.

Niche size structures climatic disequilibrium in pines (Pinus L.). New York Species Distribution Modeling Symposium. Yale University. December 2017.

Teaching

Conservation Biology (Biol 1470), Brown University
Teaching assistant, Fall 2020
Guest lectures: *Wildlife Management; Wildlife, Climate, and & Conservation*

Conservation Biology (Biol 1470), Brown University
Teaching assistant, Fall 2017

Mentoring

Morgan Florsheim, Brown University 2020, *Honors thesis graduate mentor*
Thesis title: *Understanding the role of adventive populations in tree species' ability to track climate change*

Professional Workshops

Dendrochronology Intensive Summer Course. Laboratory of Tree-Ring Research, University of Arizona. May 2018.

Professional Service

Reviewer for *New Phytologist, Ecography, Global Ecology & Biogeography, Ecosphere, Ecology & Evolution*