# Daniel L. Perret

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## 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.

## PROFESSIONAL APPOINTMENTS

**Postdoctoral Research Fellow** 2022-
*United States Forest Service Pacific Northwest Research Station*
*Oak Ridge Institute for Science and Education*

**Spatial Analyst,** *University of Montana* 2014-2016
Collaborative project with the University of Montana Avian Science Center, Sage Grouse Initiative, and the US Fish & Wildlife Service, 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 data delivery platform: https://map.sagegrouseinitiative.com/ecosystem.

**Field Research Technician,** *Yellowstone Wolf Project* 2013-2014
Backcountry fieldwork in support of wolf and cougar research including wildlife necropsies, radiotelemetry tracking, behavioral observation, non-invasive genetic sampling, and remote camera work. Additional duties communicating wildlife science to park visitors.

## EDUCATION

**PhD, Brown University** 2022
*Niche-based perspectives on species' responses to climate change: pines as a multi-scale case study*
Department of Ecology, Evolutionary & Organismal Biology
Advisor: Prof. Dov F. Sax

**BS, Stanford University** 2013
Biology (Ecology and Evolutionary Biology, *with Honors*)

## PEER-REVIEWED PUBLICATIONS

**Perret, D. L.,** M. E. K. Evans, D. F. Sax. 2024. 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*.

## MANUSCRIPTS IN PREPARATION

Kissling, M. L., M. C. McDevitt, J. Felis, **D. L. Perret,** P. M. Lukacs. Nesting ecology and movements of an ice-associated seabird, the Kittlitz's murrelet (*Brachyramphus brevirostris*) at the northern edge of its range.

**Perret, D. L.,** D. M. Bell, A. N. Gray, H. S. J. Zald. Demographic mechanisms of coexistence for subalpine tree species are vulnerable to changing climate and disturbance regimes.

**Perret, D. L.,** D. M. Bell, H. S. H. Zald. Dendroecological indicators of sugar pine (*Pinus lambertiana*) vulnerability and decline across its geographic and climatic distribution.

**Perret, D. L.,** D. M. Bell, H. S. J. Zald. Plots, planes, pixels: integrating data sources for large-scale forest mortality detection and vulnerability assessment.

## GRANTS AND AWARDS

*Plots, planes, & pixels: biological disturbance agent estimation. (2023)* $114,000
PI – Harold Zald, Co-PIs – **Daniel Perret**, David Bell
ORISE Fellowship supported by interagency agreement between the US Forest Service Pacific Northwest Research Station and the US Department of Energy.

*Vulnerability assessment of sugar pine, an iconic species in decline. (2022)* $100,000
PI – Harold Zald, Co-PIs – **Daniel Perret**, David Bell, Andrew Gray
ORISE Fellowship supported by interagency agreement between the US Forest Service Pacific Northwest Research Station and the US Department of Energy.

*Does ecological niche theory predict tree performance in exotic communities and climates? (2020)* $9,935
Doctoral Dissertation Enhancement Grant, The Bushnell Graduate Research & Education Fund.

*Reading between the rings: the climate future of North American pines. (2019)* $4,596
Graduate Research, Travel & Training Grant, Institute at Brown for Environment and Society.

*Assessing climate-driven extinction risk by measuring performance of North American pines. (2018)* $4,000
Lewis and Clark Fund for Exploration and Field Research, The American Philosophical Society.

*Assessing climate-driven extinction risk by measuring the population performance of pines. (2018)* $4,977
Graduate Research, Travel & Training Grant, Institute at Brown for Environment and Society.

*Spatial distribution and morphological variation in the mountain beaver (Aplodontia rufa). (2011)* $2,600
Stanford University Undergraduate Advising and Research Small Grant.

## ORGANIZED SYMPOSIA

*Forest Inventory Data for Global Change Ecology: Opportunities, Challenges, and Innovations.* Lead 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.* Lead organizer for workshop at Ecological Society of America. Portland, OR. August 2023.

## TALKS AND POSTERS

*Range-wide population assessments for subalpine fir: widespread disturbance-driven decline*. USFS Pacific Northwest FIA Operational Meeting. January 2024.

*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),** teaching assistant 2020
*Brown University*
Guest lectures: *Wildlife Management; Wildlife, Climate, and & Conservation*

**Conservation Biology (Biol 1470),** teaching assistant 2017
*Brown University*

## MENTORING

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| 2019-2020 | Morgan Florsheim, Brown University 2020, *Honors thesis graduate mentor* |
| 2019-2020 | Hired, trained, and mentored three undergraduate students in tree-ring sample processing and laboratory work |
| 2017-2018 | Hired, trained, and mentored two undergraduate students in map digitization and processing in ArcGIS |
| 2016-2017 | Hired, trained, and mentored one undergraduate student in searching global herbarium databases for species naturalization events |

## PROFESSIONAL WORKSHOPS

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

## PROFESSIONAL SERVICE

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

## REFERENCES

**Harold Zald**
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Pacific Northwest Research Station
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**Dov Sax**
Brown University
Department of Ecology, Evolution & Organismal Biology
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**Margaret Evans**
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