Sam C. Levin

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Education

Martin Luther University Halle-Wittenberg

PhD Biology 02/2018-Present

Martin Luther University Halle-Wittenberg

MSc Biology 04/2016-12/2017

Wake Forest University

BA Biology 08/2008-05/2012

Work Experience

Martin Luther University Halle-Wittenberg

Research Officer

02/2018-Present

26h/week

$34,000/Year

Designed and carried out data collection for *Carpobrotus* species across 6 countries and 23 field sites in their native and invaded ranges using novel, drone based methodology.

Analyzed drone data using R and C++ programming languages to connect environmental covariates to population dynamics for inference on areas at risk for future invasion under different climate scenarios.

Designed and implemented an R package, `ipmr`, for flexibly developing Integral Projection Models in the R programming language.

Designed and implemented a database, `PADRINO`, to re-build published Integral Projection Models to address synthetic questions in ecology and evolutionary biology.

Helmholtz-Zentrum für Umweltforschung

Student Research Assistant

05/2017

10h/week

$10,560/Year

German Centre for Integrative Biodiversity

Student Research Assistant

07/2016 - 01/2018

20h/week

$10,560/Year

University of Missouri-St. Louis *Field Research Technician* 11/2015 - 03/2016
37.5h/week $33,000/Year

Washington University in St. Louis *Field Research Technician* 04/2014 - 10/2015 37.5h/week $33,000/Year

Student Conservation Association *National Park Service Southeast EPMT Intern* 09/2013 - 04/2014 40h/week $10,000/Year

Publications

Journal Articles

* *denotes mentee*

Levin SC, Evers S*, Pena-Guerrero M, Compagnoni AC, Childs DZ, Knight TM & Salguero-Gomez R (*in prep*). Padrino: An open access database of Integral Projection Models.

Keppel G, Craven D, Weigelt P, Smith SA, van der Sande MT, Sandel B, **Levin SC**, Kreft H & Knight TM (2021). Synthesizing tree biodiversity data to understand global patterns and processes of vegetation. Journal of Vegetation Science. DOI: 10.1111/jvs.13021

Levin SC, Childs DZ, Compagnoni AC, Evers S*, Knight TM & Salguero-Gomez R (*in review* at *Methods in Ecology and Evolution*). ipmr: Flexibly implement Integral Projection Models in R.

Bogdan A*, **Levin SC**, Salguero-Gomez R & Knight TM. (2021). Demographic analysis of an Israeli *Carpobrotus* population. Plos One. DOI: 10.1371/journal.pone.0250879.

Paniw M, James T, Archer CR, Romer G, **Levin SC**, Compagnoni AC, *et al.* (2021). Global analysis reveals complex demographic responses of mammals to climate change. Journal of Animal Ecology. DOI: 10.1111/1365-2656.13467

Compagnoni AC, **Levin SC**, Childs DZ, Harpole S, Paniw M, Romer G, *et al.* (2021). Short-lived plants have stronger demographic responses to climate. Nature Communications. Nature Communications. DOI: 10.1038/s41467-021-21977-9

Levin SC, Crandall RM, Pokoski TC*, Stein C & Knight TM (2020). Phylogenetic and functional distinctiveness explain alien plant population responses to competition. Proceedings of the Royal Society B. DOI: 10.1098/rspb.2020.1070

Sandel B, Weigelt P, Kreft H, Keppel G, van der Sande MT, **Levin SC**, Smith S, Craven DC & Knight TM (2019). Current climate, isolation, and history drive global patterns of tree phylogenetic endemism. Global Ecology and Biogeography. DOI: 10.1111/geb.13001

Compagnoni A, Bibian BJ, Ochocki BM, **Levin SC**, Zhu K & Miller TEX (2019). popler: an R package for extraction and synthesis of population time series from the long-term ecological research (LTER) network. Methods in Ecology and Evolution. DOI: 10.1111/2041-210X.13319

Levin SC, Crandall RM, Knight TM (2019) Population projection models for 14 alien plant species in the presence and absence of above-ground competition. Ecology. DOI: 10.1002/ecy.2681

Carl G, **Levin SC**, Kühn I. (2018) spind: an R Package to Account for Spatial Autocorrelation in the Analysis of Lattice Data. Biodiversity Data Journal. DOI: 10.3897/BDJ.6.e20760

Workshops & Invited Talks

Levin SC, Childs DZ, Compagnoni AC, Evers S, Knight TM & Salguero-Gomez R. `ipmr`: An R Package for Easy and Flexible Construction and Interpretation of Integral Projection Models. Ecological Society of America, Long Beach, August 2021.

Levin SC. Invasive plants: research, control, and what you can do to help! Point Reyes National Park, May 2020. (Cancelled due to COVID-19 pandemic).

Levin SC & Salguero-Gomez R. Effective, efficient, and safe data collection with UAVs. Oxford University, January 2020.

Salguero-Gomez R, Jones OR, *et al.* A gentle introduction to the COMADRE & COMPADRE databases for demographic analyses. British Ecological Society, Belfast, December 2019.

Presentations

* *denotes mentee;* $^{\#}$ *denotes poster presentations, otherwise oral*

2020

Salguero-Gomez R,Che-Castaldo JP, Jones O, Caswell H, Ezard T, Hernandez-Yanez H, Hodgson D, Knight TM, **Levin SC**, Stott I, Thomas C, Vaupel J. (2020) The next generation of demographic databases: Building and delivering a distributed network for user contributions and engagement. Ecological Society of America

2018

Levin SC, RM Crandall, TC Pokoski, Stein C, Knight TM. Mechanisms underlying the differential success of alien plant species. Ecological Society of America – New Orleans, USA

2016

Levin SC, Stein C, Knight TM. Phylogenetic novelty alters the strength of biotic interactions for exotic plant species. NeoBiota 2016 – Vianden, Luxembourg

Levin SC, Stein C, Knight TM. Phylogenetic novelty alters the strength of biotic interactions for exotic plant species. iDiv Conference – Leipzig, Germany

2015

Poor E*,Thompson AH*, **Levin SC**, Knight TM. Novel functional traits aid the success of the invasive biennial Carduus nutans. Washington University in St. Louis Undergraduate Research Symposium – St. Louis, MO $^{\#}$

Workman M*, Thompson AH*, **Levin SC**, Knight TM. Competitive release may increase the fitness of exotic plants in their novel range. Washington University in St. Louis Undergraduate Research Symposium – St. Louis, MO $^{\#}$

2014

Patterson A*, Galluppi CG, **Levin SC**, Maynard EE, Knight TM. How plant species become common: examining the success strategies of native and invasive plants. Washington University in St. Louis Undergraduate Research Symposium – St. Louis, MO #

Van Horn T*, Galluppi CG, **Levin SC**, Knight TM. Examining the enemy release hypothesis in Ozark woody species. Washington University in St. Louis Undergraduate Research Symposium – St. Louis, MO #

Software

Maintainer (current) and developer (> v2.0.0) of *spind*. Project page and CRAN

Maintainer and developer of *ipmr*. Project page and CRAN

Maintainer and developer of the *Padrino IPM Database* and *Rpadrino*. Project page.

Contributed to development of popler, bRacatus, plotbiomes, popdemo, Rcompadre, and Rage.

Languages

Fluent in English and R, proficient with Stan, Git, and C++, and familiar with Python and German.

Certifications

United States FAA Part 107 UAV Pilot License

United States NPS S212 A Faller

Mentoring

Sanne Evers	Helmholtz-Zentrum für Umweltforschung
Ana Bogdan	Babeş-Bolyai University, Cluj-Napoca, Romania
Tyler Pokoski	University of Iowa 2017
Tom Collins	Missouri S&T 2017
Amy Patterson	Washington University in St. Louis 2015
Amibeth Thompson	Illinois College 2014
Sami Hunkler	University of California, Berkeley 2017
Thomas Van Horn	Washington University in St. Louis 2018
Sarah Link	Eureka High School 2015
Brenda Alvarado	Francis Howell North 2015
Matilda Workman	Kirkwood High School 2017
Elizabeth Poor	Clayton High School 2017

Service

Reviewer for rOpenSci, BMC Ecology, Annals of Botany, and Plant Ecology

Referees

Dr. Tiffany Knight

Martin Luther University, Helmholtz-Zentrum für Umweltforschung, German Centre for Integrative Biodiversity

tiffany.knight@idiv.de

Dr. Roberto Salguero-Gomez

Oxford University Department of Zoology

rob.salguero@zoo.ox.ac.uk