Sarah K. Swiston

Washington University — Saint Louis, Missouri
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My research focuses on developing phylogenetic methods for inferring where species used to live, using lizards as a primary system of study. I am also interested in teaching, pedagogy, and designing learning tools for current and future researchers.

EDUCATION

Washington University | Saint Louis, MO **09 2020 – Present**
Ph.D. Candidate in Ecology & Evolutionary Biology (in progress)

University of Oklahoma | Norman, OK **08 2016 – 05 2020**
B.A. in Biology, B.S. in Mathematics, minor in Music, Summa Cum Laude

FELLOWSHIPS & AWARDS

National Science Foundation Graduate Research Fellowship Program **2022 – Present**

Washington University Center for Teaching and Learning Educational Development Graduate Fellowship **2025**

Morris B. Rettner Scholarship **2025**

Carl & Pat Bynum Riggs Scholarship **2018**

National Merit Scholar **2016**

Illinois State Scholar **2016**

RESEARCH EXPERIENCE

Ph.D. Candidate | Dr. Michael Landis at Washington University **09 2021 – Present**
- Biogeography & phylogenetic comparative methods
- R package & Docker image development
- Biogeography of *Liolaemus* lizards, Hawaiian plants

Rotation Student | Dr. Jonathan Losos at Washington University **09 2020 – 01 2021**
- Global distribution of arboreal lizards
- Herpetology field experience

Research Student & Technician | Dr. Katharine Marske at University of Oklahoma **01 2019 – 04 2020**
- Lab work including beetle DNA extraction, PCR, and gel electrophoresis
- Data analysis in Geneious, QGIS, BEAST, R

Research Apprentice | University of Oklahoma Biological Station **06 2018 – 07 2018**
- Ant behavioral studies
- Ant heat tolerance testing

Lab Volunteer | Sam Noble Oklahoma Museum of Natural History: Herpetology **01 2017 – 12 2018**
- Herpetology field experience
- Specimen preparation and maintenance
- Tissue sampling
- Lab work including DNA extraction and qPCR

PUBLICATIONS

Swiston, S. K., & Landis, M. J. (2025). Testing relationships between multiple regional features and biogeographic processes of speciation, extinction, and dispersal. *Systematic Biology*, 74(2), 282–300.

PRESENTATIONS

Evolution Conference **06 2025**
EMPIRE: The ellipse model for phylogenetic inference of range evolution

Midwest Ecology and Evolution Conference **04 2025**
Modeling range evolution using ellipses in continuous space

The CIRTL Network Teaching-as-Research Presentations **04 2025**
Assessing the efficacy of computational workshops and participatory live coding in evolutionary biology

Graduate Research Symposium (Washington University) **03 2025**
Assessing the efficacy of computational workshops and participatory live coding in evolutionary biology

Ecology and Evolution Seminar (Washington University) **10 2024**
Designing and disseminating phylogenetic models of historical biogeography

Evolution Conference **07 2024**
A model of range evolution using ellipses in continuous space

Society for the Study of Amphibians and Reptiles Conference **06 2024**
Testing relationships between regional features and biogeographic processes of speciation, extinction, and dispersal in *Liolaemus* lizards

Evolution Conference **06 2023**
Testing relationships between multiple regional features and biogeographic process of speciation, extinction, and dispersal

Living Earth Collaborative Seminar (Washington University) **03 2023**
How the environment shapes diversification and dispersal: A feature-informed phylogenetic method of historical biogeography (+ Lizards!)

International Biogeography Society Conference **06 2022**
Inferring evolutionary rates in a geographic context: Incorporating region features

Midwest Ecology and Evolution Conference **03 2022**
A phylogenetic model of historical biogeography incorporating regional features

Evolution Conference **06 2021**
Why are arboreal lizards a tropical phenomenon?

POSTERS

Evolution Conference **06 2025**
EMPIRE: The ellipse model for phylogenetic inference of range evolution

Graduate Research Symposium (Washington University) **03 2025**
Education in phylogenetic modeling: The pedagogy of tutorials, software, and workshops

Society for the Advancement of Biology Education Research Midwest Conference **09 2024**
Education in phylogenetic modeling: the pedagogy of tutorials, software, and workshops

Evolution Conference **07 2024**
Education in phylogenetic modeling: The pedagogy of tutorials, software, and workshops

University of Oklahoma Undergraduate Research Day **05 2017**
Amphibious infectious disease in Oklahoma: A citizen science project

MANUSCRIPTS & THESES

Manuscript | Washington University in Saint Louis **03 2021**
Climatic constraints and the latitudinal diversity gradient: Why are arboreal lizards a tropical phenomenon?

Honors Thesis | University of Oklahoma **12 2019**
Phylogeography of New Zealand weevil *Geochus tibialis* (Curculionidae)

PRESS

News Article | Neighbors of Glen Ellyn **06 2024**
A Science Grad Student's Journey

TEACHING

Workshop Instructor | Phylogenetic Biogeography Workshop **06 2025**
06 2024
Co-Instructors: Michael Landis, Felipe Zapata, Isaac Lichter-Marck, Fábio Mendes, Michael May, Ixchel González Ramírez
Locations: Evolution Conference (06 2025), Washington University in Saint Louis (06 2024)

Guest Lecture | Webster University **10 2024**
The Mathematics of Plant Structures

Assistant Instructor | Graduate Research Fundamentals **Fall 2023, 2024**

Peer Tutor | Population Genetics **Spring 2024**

Workshop Facilitator | Data Analysis and Visualization in R for Ecologists **10 2023**
Workshop Instructor: Kaija Gahm, through Carpentries

Teaching Citation | Washington University **05 2023**
Professional Development in Teaching Program

Member | Center for Teaching and Learning Graduate Student Advisory Council **09 2022 – 05 2024**

Assistant Instructor | Evolution **Fall 2022**
Course Instructor: Dr. Ken Olsen

Research Mentor | Young Scientist Program Summer Focus Program **Summer 2022**
Mentee: Benjamin Gondzur, Metro Academic and Classical High School (Senior)

Assistant Instructor | Population Genetics **Fall 2021**
Course Instructor: Dr. David Queller

Member | EPIC Learning Community **09 2020 – 04 2021**
(Exploring Practices in the Classroom)

Member | Washington University in Saint Louis Future Educators **2020**

Member | IGNITE Learning Community **09 2024 – Present**
(Interdisciplinary Graduate Network for Inquiry, Teaching, and Engagement)

Member | Washington University Education Research Group **02 2024 – Present**

Participant | Skype a Scientist **11 2023 – Present**

Copy Editor & Reviewer | Journal of Emerging Investigators **02 2022 – Present**

Teaching Team Member | Young Scientist Program **09 2020 – Present**

PROGRAMMING

PhyloDocker | Docker Image: hub.docker.com/r/sswiston/phylo_docker **2022 – Present**

Competent in the following tools: R, R Devtools, R Shiny, RevBayes, Python, Java, Docker, QGIS

WORKSHOPS ATTENDED

Scholarship of Teaching and Learning Seminar | Washington University Center for Teaching and Learning **Spring 2024**

Data Management | Washington University Libraries Data Services **10 2023**
Responsible data management, storage, security, and availability

The Inclusive STEM Teaching Project **04 2023**

Evolutionary Quantitative Genetics | Dr. Stevan J. Arnold & Dr. Joe Felsenstein **07 2022**
Lecturers: Dr. Patrick Carter, Dr. Adam Jones, Dr. Brian O'Meara, Dr. Samantha Price, Dr. Josef Uyeda

Short Teaching Workshops | Washington University Center for Teaching and Learning
Applying Cognitive Science (09 2021), Engaging in Equity Pedagogy (11 2021), Introduction to Pedagogical Scholarship (12 2021), Developing Effective Summative Assessments (02 2022), Planning and Organizing a Class Session (09 2023)

GRADUATE COURSEWORK

Population Genetics, Genomics, Community Ecology, Stochastic Processes, Data Structures & Algorithms

SOCIETY MEMBERSHIPS

American Society of Naturalists (ASN)

Partners in Amphibian and Reptile Conservation (PARC)

Society for the Advancement of Biology Education Research (SABER)

Society for the Study of Amphibians and Reptiles (SSAR)

Society of Systematic Biologists (SSB)

Society for the Study of Evolution (SSE)

REVIEWED FOR

Evolution

Journal of Emerging Investigators

Methods in Ecology & Evolution

Molecular Phylogenetics & Evolution

Proceedings of the Royal Society B

Systematic Biology