

SADIE ROTH

Lubbock, TX

EDUCATION

- PhD** Texas Tech University, Natural Resources Management 2022- present
Dissertation: Examining patterns of anuran reproduction, disease, and metapopulations in a dynamic desert landscape
Advisors: Dr. Kerry Griffis-Kyle and Dr. Matthew Barnes
- M.Sc.** Texas Tech University, Natural Resources Management 2019-2022
Thesis: Sonoran Desert amphibians in isolated waters: investigating threats posed by drought and pathogens
Advisors: Dr. Kerry Griffis-Kyle and Dr. Matthew Barnes
- B.Sc.** University of South Florida, Environmental Biology 2018
- A.A.** Florida State University 2016

GRANTS

- The Wildlife Society Travel Award - \$800** 2024
- Graduate Student Research Competition Award - \$1,500** 2024
Awarded by the Texas Academy of Science support research conducted by Graduate students in Texas.
- Graduate Student Research Support Award - \$1,456** 2024
Awarded by the Texas Tech Graduate School award to recognize and reward outstanding excellence and research of graduate students.
- Forrest Shreve Award - \$1,500** 2023
Awarded by the Ecological Society of America to support research that increases understanding of patterns and processes of desert organisms.
- Charles H. Lowe Fund Grant - \$500** 2019
Awarded by the Tucson Herpetological Society to support research that contributes to the conservation of the herpetofauna of the Sonoran Desert.
- Association of Natural Resource Scientists Travel Award - \$500** 2019

Awarded by the Texas Tech Association of Natural Resource Scientists to provide funds for conference travel to students who volunteer with the organization.

HONORS AND AWARDS

Received

Best Poster, First Place 2024
Awarded at the National Wildlife Society (TWS) Meeting in Baltimore, MD

Davis College Outstanding Graduate Student Award- \$800 2024

Helen Devitt Jones Fellowship - \$10,500 2024
Awarded to graduate students with exceptional community service records.

Best Graduate Student Poster, First Place - \$150 2023
Awarded at the Davis College Graduate Student Poster Competition, September 2023

AbbVie Immunology Scholarship - \$15,000 2022
Awarded to students who are making a significant contribution to their field and show excellent leadership skills and a dedication to community service.

Best Student Poster, First Place - \$100 2022
Awarded at the Global Amphibian and Reptile Disease Meeting, August 2022

Academic Freedom Endowed Fellowship - \$1,500 2021
Awarded by Texas Tech University for academic achievement.

Helen Devitt Jones Fellowship - \$10,000 2019
Awarded to incoming graduate students with exceptional community service records.

Honorable Mention

NSF Graduate Research Fellowship 2020
Funds exceptional graduate students and their research in STEM.

RESEARCH EXPERIENCE

Thesis, Texas Tech University, Lubbock, TX 2019-2022
Advisors: Dr. Kerry Griffis-Kyle and Dr. Mathew Barnes

- Studied novel threats to amphibians in the Sonoran Desert
- Examined the persistence of the amphibian pathogen *Batrachochytrium dendrobatidis* in the Sonoran Desert using environmental DNA and direct swabbing of amphibians
- Assessed the relationship between drought and breeding effort of an ephemeral pool-breeding toad using audio-recording data

Oklahoma State University, Stillwater, OK 2018
Research Technician, Dr. Stanley Fox

- Captured and marked ringed salamanders with injectable elastomer for population monitoring project
- Sampled for chytrid fungus and ranavirus using environmental DNA (eDNA) methods and direct swabbing of salamanders
- Used a variety of survey and trapping methods (drift fences, pitfall traps, minnow traps, visual encounter) to conduct herpetofauna surveys

University of South Florida, Tampa, FL 2017-2018
Research Technician, Dr. Jason Rohr

- Conducted independent research on infectivity decay rates of *Batrachochytrium dendrobatidis* in amphibians
- Performed cell counts, quantitative PCR, dissections of specimens, and DNA extractions
- Grew and maintained cultures of *Batrachochytrium dendrobatidis*
- Assisted post-doctoral researcher in literature review of effects of pesticides on amphibian immune response

University of Georgia, Athens, GA 2016
NSF REU Researcher, Dr. John Maerz

- Conducted independent research on activity patterns of plethodontid salamanders along a hybridization gradient in field enclosures
- Assisted in nighttime terrestrial salamander sampling including capturing, identifying, characterizing sex and age, and marking with elastomer
- Participated in head-start project of endangered anuran species including care and measurement of tadpoles and metamorphic frogs, field surveys, and marking by toe clipping

Florida State University, Tallahassee, FL 2016
NSF REU Researcher, Dr. Emily Lemmon

- Conducted independent research on salamander microhabitat use
- Aided graduate students in amphibian collection and population surveys

PUBLICATIONS

Roth, S.A., Griffis-Kyle, K.L., Barnes, M.A. (2024). *Batrachochytrium dendrobatidis* in the thermally extreme Sonoran Desert. *EcoHealth* 1-11.

Rumschlag, S. L., **Roth, S. A.**, McMahon, T. A., Rohr, J. R., & Civitello, D. J. (2021). Variability in environmental persistence but not per capita transmission rates of the amphibian chytrid fungus leads to differences in host infection prevalence. *Journal of Animal Ecology* 91(1):170-181.

Kabat K.L., **Roth S.A.**, Emert A., Sutor S. (2020). *Sistrurus tergeminus* (Western Massasauga) Geographic Distribution Note. *Herpetological Review* 51(4):783-784.

PRESENTATIONS

Invited Oral Presentations

S. Roth, K. Griffis-Kyle, M.A. Barnes. *Batrachochytrium dendrobatidis* in the Sonoran Desert. *EPA Pacific Southwest Meeting*. April 2024.

S. Roth, K. Griffis-Kyle, M.A. Barnes. *Batrachochytrium dendrobatidis* in unexpected places. *Chiricahua Leopard Frog Recovery Task Force Meeting*. November 2021.

Oral Presentations

S. Roth, M.A. Barnes, K. Griffis-Kyle. Evaluating patterns of occurrence and reproduction for the red-spotted toad in a dynamic desert system. *Tri-National Sonoran Symposium*. March 2024.

S. Roth, M.A. Barnes, K. Griffis-Kyle. Breeding site selection for the red-spotted toad in a dynamic desert system. *Texas Academy of Science*. March 2024.

S. Roth, M.A. Barnes, K. Griffis-Kyle. Constructed Sonoran Desert wildlife waters do not support amphibian breeding during drought. *The Wildlife Society Annual Meeting*. November 2023.

S. Roth, K. Griffis-Kyle, M.A. Barnes. An unexpected amphibian pathogen in the Sonoran Desert. *Tri-National Sonoran Symposium*. March 2020.

Poster Presentations

*Indicates undergraduate first author

S. Roth, K. Griffis-Kyle, M.A. Barnes. Dynamics of the Amphibian Pathogen *Batrachochytrium dendrobatidis* (Bd) in the Sonoran Desert. *The Wildlife Society Annual Meeting*. October 2024. **Winner of Best Poster**.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Evaluating predictors of tadpole occurrence for an amphibian in a dynamic desert system. *Texas Tech Natural Resources Management Research Day*. April 2024. **Winner of Best Graduate Student Poster (Third Place)**.

E. King*, **S. Roth**, M.A. Barnes, K. Griffis-Kyle. Presence of *Batrachochytrium dendrobatidis* on amphibians and in environmental samples in west Texas. *Texas Tech Natural Resources Management Research Day*. April 2024.

M. Zamora*, **S. Roth**, M.A. Barnes. Quantifying the pathogen *Batrachochytrium dendrobatidis* (Bd) on amphibians in Lubbock, Texas. *Texas Tech Natural Resources Management Research Day*. April 2024.

E. King*, **S. Roth**, M.A. Barnes, K. Griffis-Kyle. Presence of *Batrachochytrium dendrobatidis* on amphibians and in environmental samples in west Texas. *Texas Academy of Science*. March 2024. **Winner of Freshwater Sciences Student Poster**.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Primary drought mitigation strategy for desert wildlife does not support an amphibian breeding during drought. *South Central Climate Adaptation Science Center Annual Science Meeting*. November 2023.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Constructed Sonoran Desert wildlife waters do not support amphibian breeding during drought. *Texas Tech University Davis College Poster Competition*. September 2023. **Winner of Best Graduate Student Poster**.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Constructed Sonoran Desert wildlife waters do not support amphibian breeding during drought. *Texas Tech Department of Natural Resources Research Day*. April 2023.

S. Roth, K. Griffis-Kyle, M.A. Barnes. The wildlife pathogen *Batrachochytrium dendrobatidis* (Bd) unexpectedly persists in hot deserts beyond its predicted range. *Texas Tech University Davis College Poster Competition*. September 2022.

S. Roth, K. Griffis-Kyle, M.A. Barnes. *Batrachochytrium dendrobatidis* (Bd) persists in the Sonoran Desert despite temperature and hydrologic conditions that exceed its known physiological tolerances. *Global Amphibian and Reptile Disease Conference*. August 2022. **Winner of Best Student Poster**.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Presence of the amphibian pathogen *Batrachochytrium dendrobatidis* in a hot desert environment that exceeds its physiological tolerances. *Texas Academy of Science Annual Meeting*. February 2021.

S. Roth, K. Griffis-Kyle, M.A. Barnes. The amphibian pathogen *Batrachochytrium dendrobatidis* in Sonoran Desert environments exceeding known physiological tolerances. *The Wildlife Society Joint Annual Arizona and New Mexico Meeting*. February 2021.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Presence of *Batrachochytrium dendrobatidis* in isolated Sonoran Desert waters. *Ecological Society of America Annual Meeting*. August 2020.

S. Roth, K. Griffis-Kyle, M.A. Barnes. Presence of an amphibian pathogen in isolated Sonoran Desert waters. *Tri-National Sonoran Symposium*. March 2020,

S. Roth, S. Rumschlag, J. Rohr. Infectivity Decay Rates of *Batrachochytrium dendrobatidis* in *Osteopilus septentrionalis*. *University of South Florida Undergraduate Research Conference*. April 2018.

S. Roth, A. Maddigan, K. McEntire, J. Maerz. Activity Patterns of Plethodontid Salamanders Along a Hybridization Gradient in Field Enclosures. *Coweeta LTER Research Conference*. August 2016.

COMMUNITY SERVICE AND OUTREACH

Arthritis Foundation National RA Connect Group Facilitator	2022-present
Volunteer Teaching Assistant for Intro. to Natural Resource Management	2019-present
Scale, Tails, and Trails (environmental outreach event) Coordinator	2019
Lubbock Community Garden Fall Fundraiser Volunteer	2019
Classroom Science Outreach Volunteer (Hillsborough County Schools, FL)	2018
Non-Native Wildlife Responder, Florida Fish & Wildlife Commission	2017-2018
Veterinary Assistant, Leon County Animal Services & Shelter	2017

PROFESSIONAL AFFILIATIONS

Ecological Society of America	2020-Present
Texas Academy of Science	2020-Present
Society for Study of Reptiles and Amphibians	2019-Present
Tucson Herpetological Society	2019-Present
Association of Natural Resource Scientists	2019-Present

ADVISED UNDERGRADUATE PROJECTS

Zamora, M. 2023. Quantification of *Batrachochytrium dendrobatidis* in amphibian swabs and environmental DNA samples.

King, E. 2022. Presence of *Batrachochytrium dendrobatidis* in urban playas of West Texas.

Bomhoff, B. 2021. Impacts of invertebrate predators on tadpole occupancy and abundance in the Sonoran Desert.

Sanchez, E. 2020. Sonoran Desert cactus community composition associations with bajada aspect and slope.

ADDITIONAL TRAINING

Wilderness First Aid. 2024. *Solo Schools*.

Cartography. 2024. *ESRI MOOC*.

Spatially-Explicit Occupancy Modelling. 2023. *The Wildlife Society*.

Genomic Approaches for Wildlife Conservation & Management. 2023. *The Wildlife Society*.

Statistical Methods Series: Spatial Modeling in Ecology. 2023. *Ecological Forecasting Initiative*.

Field Safety Program. 2022. *Texas Tech University Environmental Health and Safety*.

Diagnosis of Amphibian and Reptile Diseases. 2021. *Global Amphibian and Reptile Disease Group*.