Lia Ossanna

PhD Student · Rangeland and Restoration Ecologist
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Education

University of Arizona *Tucson, AZ*
PhD student in Natural Resources, Ecology of Rangelands *Aug 2020 - Present*

- Advisor: Elise Gornish
- Minor in Data Science

University of Arizona *Tucson, AZ*
BS in Environmental Science with Honors, summa cum laude *Aug. 2015 - May 2019*

- Minors in Sustainable Plant Systems, East Asian Studies
- Thesis: Nitrogen dynamics as an indicator of mine waste revegetation progress

Fellowships & Awards

Fellowships

2022-2023 **Data Science Ambassador**, University of Arizona
Fall 2022 **University Sprint Participant**, The Opportunity Project, US Census Bureau
2020-2024 **NSF Graduate Research Fellow ($138,000)**, National Science Foundation
2020-2021 **Graduate College Fellowship ($1,400)**, University of Arizona
2019-2020 **Superfund Research Program Training Core Fellow**, University of Arizona
2018-2019 **Undergraduate Research Fellowship ($2,000)**, American Society for Microbiology

Awards

2022 **Student Travel Grant ($500)**, Ecological Society of America, Southwest Chapter
Travel Grant ($1,100), Graduate and Professional Student Council, University of Arizona
2019 **2nd Place Student Poster Presentation**, Society for Ecological Restoration
Outstanding Senior, University of Arizona Department of Environmental Science
Silver Award for Excellence, University of Arizona Honors College
2nd Place SWESx Undergraduate Oral Presentation, UArizona Dept of Environmental Science
2018 **1st Place SWESx Undergraduate Oral Presentation**, UArizona Dept of Environmental Science
2017 **2nd Place SWESx Undergraduate Poster Presentation**, UArizona Dept of Environmental Science
2015-2019 **Dean's List with Distinction**, University of Arizona

Professional Experience

PhD Student *Tucson, AZ*
University of Arizona *Aug. 2020 - Present*

- Meta-analysis on a technique to reduce invasive plants using soil carbon amendments.
- Analysis of 10 years of vegetation monitoring for rock detention structures to slow erosion on a southern Arizona ranch, in collaboration with Altar Valley Conservation Alliance.
- Measuring invasive species response to extreme precipitation events at RestoreNet sites, a USGS restoration project spanning across the southwestern US.
- Survey and analysis of buffelgrass (*Pennisetum ciliare*) distribution in an urban ecosystem.

Research Specialist *Tucson, AZ*
UNIVERSITY OF ARIZONA *May 2019 - Aug. 2020*

- Analyzed microbial diversity, community composition, and soil microbe-plant relationships for mine reclamation and rubber biosynthesis in arid lands.
- Managed quality control standards and protocol optimization for DNA extractions and qPCR.

Undergraduate Researcher *Tucson, AZ*
UNIVERSITY OF ARIZONA *July 2016 - May 2019*

- Researched mine revegetation to support sustainable reclamation management practices by analyzing quality of waste rock and capping materials (soil samples).
- Managed total nitrogen analysis and DNA extractions for soil and waste rock samples.
- Completed individual research on biogeochemical indicators of soil quality, and the effects of nitrogen cycling and fertility island on ecosystem regeneration for Honors Thesis.

Environmental Organic Chemistry Preceptor *Tucson, AZ*
UNIVERSITY OF ARIZONA *Aug. 2018 - Dec. 2019*

- Upper-division mixed graduate/undergraduate class.
- Held weekly office hours, and homework and test review sessions.
- Graded homework and exams.

Citizen Scientist Intern *Tucson, AZ*
SAGUARO NATIONAL PARK *Aug. 2015 - May 2016*

- Led and managed volunteer groups of all ages in conducting Centennial Saguaro Surveys.

Skills

Field work	Plant surveys and rangeland monitoring, soil sampling, plant identification (for the Southwestern US).
Software & coding	Certified Carpentries Instructor, R/RStudio, Git/GitHub, Markdown, high performance computing (HPC), LaTeX(LaTeX), Microsoft Office Suite, ArcGIS Pro.
Laboratory analyses	DNA extraction; PCR; qPCR; amplicon sequencing analysis; gel electrophoresis; soil chemical analysis.

Publications

Ossanna LQR & Gornish ES (2023). Efficacy of labile carbon addition to reduce fast-growing, invasive non-native plants: A review and meta-analysis. *Journal of Applied Ecology, 60*, 218-228. `https://doi.org/10.1111/1365-2664.14324`

Ossanna LQR, Serrano K, Jennings LL, Dillon J, Maier RM, Neilson JW (2023). Progressive belowground soil development associated with sustainable plant establishment during copper mine waste revegetation. *Applied Soil Ecology, 186*, 104813. `https://doi.org/10.1016/j.apsoil.2023.104813`

Research Presentations

Ossanna LQR, Guglielmo J, Miller M, Davis R, Gornish ES. Using rock detention structures to slow erosion in ephemeral streams: A 10-year case study. Oral presentation: Society for Range Management Annual Meeting. February 2023. Boise, ID.

Ossanna LQR, Guglielmo J, Miller M, Davis R, Gornish ES. Using rock detention structures to slow erosion in ephemeral streams: A 10-year case study. Oral presentation: Society for Range Management, Arizona Section winter meeting. February 2023. Maricopa, AZ.

Ossanna LQR, Guglielmo J, Miller M, Davis R, Gornish ES. Using rock detention structures to slow erosion in ephemeral streams: A 10-year case study. Oral presentation: Society for Range Management, Arizona Chapter Winter Meeting. February 2023. Maricopa, AZ.

Ossanna LQR, Sittig J, Miller M, Davis R, Gornish ES. Induced meandering watershed restoration using rock structures to decrease arroyo erosion. Poster presentation: Society for Range Management Annual Meeting. February 2022. Santa Fe, NM.

Ossanna LQR, Serrano K, Jennings LL, Maier RM, Neilson JW. Vegetation-driven soil development during waste rock reclamation at a copper mine. Oral presentation: Soil Science Society of America Annual Meeting. November 2020. Virtual.

Neilson JW, **Ossanna LQR**, Placido D, Elshikha DE, Dong C, Ponciano G, Maier RM, McMahan C. Associations between the Guayule (*Parthenium argentatum* G.) rhizosphere microbiome, plant growth stage, and rubber production. Oral presentation: Soil Science Society of America Annual Meeting. November 2020. Tucson, AZ (Virtual).

Ledesma L, **Ossanna LQR**, Placido D, Elshikha DE, Dong C, Ponciano G, McMahan C, Maier RM, Neilson JW. Associations between soil rhizosphere bioavailable phosphorus, phosphorus solubilizing microorganisms, and guayule growth stage and rubber production. Poster presentation: Soil Science Society of America Annual Meeting. November 2020. Virtual.

Ossanna LQR, Brown KS, Chen Y, Placido D, Elshikha DE, Dong C, Ponciano G, Wang S, Waller PM, Diereg D, McMahan C, Maier RM, Neilson JW. The significance of the soil microbiome to guayule production. Oral presentation: SBAR Annual Retreat. July 2020. Tucson, AZ (Virtual).

Jennings LL, **Ossanna LQR**, Fontana C, Farrell H, Kline A, Gornish E, Neilson JW, Maier RM. Biotic potential of degraded soil development on reclaimed mine tailings in southern Arizona. Poster presentation: American Geophysical Union Annual Meeting. December 2019. San Francisco, CA.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Identifying biogeochemical indicators to measure fertility island effects during mine waste revegetation. Poster presentation: NIEHS Superfund Research Program Annual Conference. November 2019. Seattle, WA.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Nitrogen dynamics as an indicator of mine waste revegetation progress. Poster presentation: Society for Ecological Restoration Southwest Chapter Annual Conference. November 2019. Tucson, AZ.

Ossanna LQR, Placido D, Elshikha DE, Dong C, Ponciano G, McMahan C, Maier RM, Neilson JW. Root-zone microbiome dynamics and guayule rubber production. Poster presentation: SBAR Annual Retreat. September 2019. Tucson, AZ.

McMahan C, Placido D, Elshikha DE, Dong C, Ponciano G, **Ossanna LQR**, Neilson JW. Dormancy and the guayule (*Parthenium argentatum* G.) soil microbiome. Poster presentation: Association for the Advancement of Industrial Crops Annual Conference. September 2019. Tucson, AZ.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Nitrogen dynamics as an indicator of mine waste revegetation progress. Poster presentation: American Society of Microbiology Annual Conference. June 2019. San Francisco, CA.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Nitrogen dynamics as an indicator of mine waste revegetation progress. Oral presentation: University of Arizona SWESx. March 2019. Tucson, AZ.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Nitrogen dynamics as a biogeochemical indicator of revegetation progress for mine waste rock. Poster presented at: Soil Science Society of America Annual Conference. January 2019. San Diego, CA.

Jennings LL, **Ossanna LQR**, Theilmann ML, Neilson JW, Maier RM. Microbial bio-indicators of degraded lands on reclaimed mine tailings in southern Arizona. Invited oral presentation: Soil Science Society of America Annual Conference. January 2019. San Diego, CA.

Serrano K, **Ossanna LQR**, Jennings LL, Neilson JW, Maier RM. Biogeochemical factors affecting phosphorous availability during revegetation of mine waste rock slopes. Poster presentation: Soil Science Society of America Annual Conference. January 2019. San Diego, CA.

Ossanna LQR, Serrano K, Jennings LL, Neilson JW, Maier RM. Using total nitrogen and DNA biomass content as biogeochemical indicators of incipient soil development through measuring mine waste rock revegetation. Oral presentation: University of Arizona SWESx. April 2018. Tucson, AZ.

Ossanna LQR, Gil-Loaiza J, Jennings LL, Maier RM, Neilson JW. Determining biogeochemical indicators of soil quality: Measuring mining waste rock revegetation progress using total nitrogen and biomass content. Poster presentation: University of Arizona SWESx. April 2017. Tucson, AZ.

Professional Development

Carpentries Instructor Training *Virtual*
The Carpentries *Dec 2022*

- 2-day intensive training workshop to become a certified Carpentries Instructor, and teach workshops about introductory coding skills needed for researchers.

Container Basics Workshop *Tucson, AZ/virtual*
CyVerse *May 2022*

- 2-day intensive workshop on how to use containers workflows and improve reproducibility.

Reproducibility and Data Science Skills Workshop *Tucson, AZ/virtual*
University of Arizona *Feb. 2022 - Apr. 2022*

- 10-session workshop covering Git and GitHub, project management and best practices for coding, and data cleaning and visualization in R.

Foundational Open Science Skills Workshop *Tucson, AZ/virtual*
CyVerse *Sept. 2021 - Nov. 2021*

- 10-week workshop covering the principles and practice of open science, developing data management plans and metadata standards, and using CyVerse infrastructure.

Software Carpentry Workshop *Tucson, AZ*
University of Arizona *Oct. 2019*

- 2-day intensive workshop on introductory Unix shell, Git/GitHub, and R/RStudio skills.

Transdisciplinary Environmental Science for Society *Tucson, AZ/virtual*
University of Arizona *Sept. 2019*

- 4-week course designed to connect scientific knowledge with policymakers and practitioners through transdisciplinary research to solve complex environmental problems.

Service

2023-2024	**Young Professionals Conclave**, Chair, AZ section of Society for Range Management
Spring 2023	**ResBaz Arizona**, Steering Committee member and conference organizer
	Tucson Women in Data Science (WiDS), Conference organizer
Mar 2023	**Southern Arizona Regional Science and Engineering Fair (SARSEF)**, Judge
Oct 2022	**BRIDGES Data Science Skills Workshop, Pt. 2**, Helper
Sept 2022	**Data Carpentry for Ecologists Workshop**, Helper
2022-2023	**Natural Resources Graduate Student Organization**, Range Management Representative
July 2022	**ESA Early Career Outstanding Restoration Paper Award**, Judge
May 2022	**ResBaz Arizona**, Helper for Git/GitHub and Intro to R workshops
Mar 2022	**Southern Arizona Regional Science and Engineering Fair (SARSEF)**, Judge
Mar 2022	**UArizona Ecological Restoration Club**, Invited talk
	Girls on outdoor Adventures for Leadership and Science (GALS), Mentor
2021	**Reflecting on Postdoc Mentoring**, Panelist, University of Arizona
	ESA Early Career Outstanding Restoration Paper Award, Judge
2019	**SBAR Project Puente**, Mentor for undergraduate intern, University of Arizona
	KXCI Thesis Thursday, Invited guest, KXCI Community Radio

Professional Memberships

Society for Range Management, Society for Ecological Restoration, Ecological Society of America