

Lydia L. Jennings, PhD Candidate

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Education:

- 2014-Present **The University of Arizona.** Tucson, AZ.
PhD Candidate Environmental Sciences (in progress).
Department of Soil, Water and Environmental Science.
Minor in American Indian Studies.
(Expected: May 2020).
Thesis Title: Developing Microbial Bio-indicators of Soil Formation on Reclaimed Mine Tailings in Southern Arizona
Advisors: Dr. Raina Maier & Dr. Julie Neilson
- 2008-2012 **California State University, Monterey Bay (CSUMB).** Seaside, CA.
B.S. in Environmental Science, Technology and Policy
Concentration: Watershed Science
Minor in Biology
- 2006-2008 **Cabrillo College.** Santa Cruz, CA.
Associate of Science in Biology

Research Interests:

- Fate, transport, and biogeochemistry of environmental pollutants
- Bioremediation
- Environmental justice for underrepresented groups

Honors and Awards:

- 2019 American Geophysical Union's "Voice for Science" Science Communication Fellow.
- 2019 1st place graduate oral presentation. The University of Arizona's Earthweek SWESx. Tucson, AZ.
- 2019 Soil Science Society of America "Social Media Outreach" contest. 1st place. San Diego, CA.
- 2018 The University of Arizona Native American Student Affairs "Outstanding Graduate Service Award." Tucson, AZ.
- 2018 American Indian Science and Engineering Society's Leadership Summit, "Rising Leader Award"
- 2009-2011 Ronald E. McNair Post-Baccalaureate Achievement Program Scholar

- 2010 Beta Beta Beta Biological Honor Society Research Award Recipient
- 2010 SMART Scholarship Recipient, California State University, Monterey Bay. Science, Mathematics, Research and Technology Scholarship
- 2011, 2010 American Society of Limnology and Oceanography Minority Participation Travel Awards
- 2008-2010 Society for the Advancement of Chicano and Native American Science Travel Awards

Fellowships and Grants:

- 2019 Native Nations Institute Indigenous Data Sovereignty Doctoral Scholar
- 2019 Southwest Climate Adaptation Science Center Natural Resources Workforce Development Fellowship.
- 2019 David A. Baker – Newmont Environmental: Mineral Development and Sustainability Fellowship
- 2017 American Indian Science and Engineering Society’s “Lighting the Pathway to Faculty Careers” Fellowship
- 2015 National Science Foundation Graduate Research Fellowship Program Recipient
- 2014 University of Arizona Superfund Research Program Training Core Fellow
- 2014 Alfred P. Sloan Indigenous Graduate Program Fellow

Work Experience:

2014-Present

Graduate Research Assistant-Environmental Microbiology Group in the Department of Soil, Water and Environmental Science.

University of Arizona-Tucson, AZ.

Advisor: Dr. Raina Maier

- Developing microbial biogeochemical indicators as tools to evaluate active mine reclamation with the Center for Environmentally Sustainable Mining
- Researching policies around extraction on federal land that tribal Nations have ancestral rights claims
- Indigenous Data Sovereignty & Data Governance for Environmental Scientists

2011-2013

Environmental Toxicologist, Department of Environmental Toxicology.

University of California, Davis- Granite Canyon Marine Pollution Studies Laboratory-Monterey, CA.

Advisor: Brian Anderson, MS

Projects included:

- *Stream Pollution Trends Project*- Collected and preformed toxicity tests on samples from 97 watersheds throughout California to determine water quality trends, spatial and temporal variability, and optimized sediment toxicity testing system. I also preformed data entry and created GIS visuals for annual reports.

- *Assessment of Hypersaline Brine to Seven Marine Species*-Performed nine Ocean Plan toxicity tests using a concentration gradient of hyper saline brine in order to determine the effect of salinity on survival, growth, development and fertilization processes of seven common marine organisms. Information was used to inform regulatory agencies about the potential biological effects of a planned desalinization project.
- *The San Francisco Bay Regional Monitoring Program*- Performed toxicity testing on sediment samples in collaboration with the San Francisco Estuary Institute to monitor the San Francisco Bay ecosystem.
- *The Effectiveness of Vegetative Treatment Systems on Agricultural Runoff*- Collected and preformed toxicity tests on agriculture run-off samples that were treated by a vegetative system in order to evaluate the effectiveness of off-farm pesticide loads. Helped maintain the weirs and plant growth in the system.

2009- 2011

Undergraduate Researcher

California State University, Monterey Bay-Seaside, CA.

Advisor: Sharon Anderson, Ph.D.

- Developed a six-month monitoring project in collaboration with the Monterey National Marine Sanctuary Network to collect and analyze surface street sediment for heavy metal pollution in watershed areas within the Monterey Peninsula.
- Performed trace metals analysis using an inductively coupled plasma mass spectrometry.

2010 **Undergraduate Researcher.**

University of Southern California-Los Angeles, CA.

Advisor: Sergio Sañudo Wilhelmy, Ph.D.

- Evaluated nutrients and trace metals influence B-vitamin synthesis and cycling in pelagic waters using high performance liquid chromatography detection and multivariate statistical analysis.

2009 **Undergraduate Researcher.**

Georgia Institute of Technology-Atlanta, GA.

Chemical Aquatic Ecology Research Experience for Undergraduates.

Advisor: Joseph Montoya, Ph.D.

- Completed nutrient analysis and nitrogen fixation measurements using gas chromatography on the cyanobacteria *Trichodesmium*.

2008 **Undergraduate Researcher.**

University of California, Santa Cruz- Santa Cruz, CA.

ACCESS Summer Research Experience for Undergraduates

Advisor: A. Russell Flegal, Ph.D.

- Evaluated submarine groundwater discharge for methylmercury.
- Assisted in field sampling, nutrient analysis, suspended sediment analysis, and total mercury analysis.

2006 **Undergraduate Researcher.**

National Marine and Fisheries Services-Southwest Fisheries Science Center-Santa Cruz, CA.

Advisor: Susan Sogard, Ph.D.

- Conducted fecundity analysis of larval partition on rockfish species to understand maternal effects on larval quality in rockfish.
- Aided in electro shock fishing of juvenile steelhead salmon.

Publications:

Anderson, B.S., Phillips, B.M., Voorhees, J., Peterson, M., **Jennings, L.**, Fojut, T., Vasquez, M., Tjeerdema, R. 2015. *Relative toxicity of bifenthrin to Hyalella azteca in 10-day vs. 28-day exposures*. Integrated Environmental Assessment and Management. 11(2).

Phillips, B.M., Anderson, B.S., Siegler, K., Voorhees, J., **Jennings, L.**, Katz, S., Tjeerdema, R.J., 2012. *Evaluating the Toxicity of Hypersaline Brine Using Nine California Ocean Plan Toxicity Test Protocols*. Final Technical Report. California State Water Resources Control Board. Pp.15.

Research Presentations:

Jennings, L.L., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2019**. Earthweek SWESx. Tucson, AZ. Oral Presentation: *Microbial Bio-indicators of Degraded Lands on Reclaimed Mine Tailings in Southern Arizona*.

Jennings, L.L., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2019**. Soil Science Society of America. San Diego, CA. Oral Presentation: *Microbial Bio-indicators of Degraded Lands on Reclaimed Mine Tailings in Southern Arizona*. (Invited).

Jennings, L.L., Raine, S.C. **2018**. American Indian Science and Engineering Society's National Conference. Oklahoma City, OK. Session Presentation: *Data Sovereignty: How Scientists and Researchers Can Empower Indigenous Data Governance*.

Jennings, L.L., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2018**. Madrean Conference. Tucson, AZ. Oral Presentation: *Understanding the Microbiome of Degraded Lands on Reclaimed Mine Tailings in Southern Arizona*.

Jennings, L.L., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2018**. Restoring K'e Conference. Tucson, AZ. Oral Presentation: *Biogeochemical Indictors of Soil Formation on Reclaimed Mine Tailings in Southern Arizona*.

Jennings, L.L., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2018**. American Indian Science and Engineering Society's Region 3 Conference. Tucson, AZ. Oral Presentation: *Biogeochemical Indictors of Soil Formation on Reclaimed Mine Tailings in Southern Arizona*.

Jennings, L.L., Raine, S.C., Begay, R. **2018**. American Indian Science and Engineering Society's Region 3 Conference. Tucson, AZ. Oral Presentation: *Data Sovereignty: How Scientists and Researchers Can Empower Indigenous Data Governance*.

Jennings, L.L., Rivera, B., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2018**. Earthweek SWESx. Tucson, AZ. Oral Presentation: *Biogeochemical Indictors of Soil Formation on Reclaimed Mine Tailings in Southern Arizona*.

Jennings, L.L. **2018**. Western Society of Weed Science. Santa Ana, CA. *Land Acknowledgement and Indigenous Knowledge in Science*. (Invited)

Jennings, L.L., Rivera, B., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2017**. Society for Mining, Metallurgy and Exploration (SME) Arizona Conference. Tucson, AZ. Poster Presentation: *How Does Soil Cover Depth Matter for Reclamation Efforts?*

Jennings, L.L., Rivera, B., Ossanna, L., Theilmann, M., Neilson, J., Maier, R. **2017**. Earthweek SWESx. Tucson, AZ. Oral Presentation: *Mine Tailing Cover Material: Does Depth Matter?*

Jennings, L.L. **2016**. National Institute of Environmental Health Sciences (NIEHS) Superfund Research Program EHS FEST. Durham, NC. Poster: *Microbes as Indicators of Soil Quality: Evaluating Microbial Bio-indicators to Assess Mining Waste Reclamation Progress in Southern Arizona*.

Jennings, L.L. **2016**. Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference. Long Beach, CA. Oral Presentation: *Evaluating Microbial Bio-indicators to Assess Mining Waste Reclamation Progress in Southern Arizona*.

Jennings, L.L. **2016**. Integrated Optics for Undergraduates (IOU) Research Experience-Summer Speaker Series 2016. Tucson, AZ. Oral Presentation: *Evaluating Microbial Bio-indicators to Assess Reclamation Progress & Life at UA as a Native Wildcat*.

Jennings, L.L., Neilson, J.W., Maier, R.M. **2016**. Earthweek SWESx. Tucson, AZ. Oral Presentation: *Biogeochemical Indicators of Phytostabilization on Reclaimed Mine Tailings in Southern Arizona*.

Rivera, B.D., Jennings, L.L., Gullo, C.F., Maier, R.M., Neilson, J.W. **2016**. Undergraduate Biology Research Presentation. Tucson, AZ. Poster: *The Unseen Influence: Using Microbiota Presence to Evaluate Mine Revegetation Success*.

Jennings, L.L., Rivera, B.D., Neilson, J.W., Maier, R.M. **2015**. NIEHS Superfund Colloquium. Tucson, AZ. Oral Presentation: *Evaluating active mine reclamation for bio-physio-chemical indicators of re-vegetation success*.

Jennings, L.L., Rivera, B.D., Neilson, J., Maier, R.M. **2015**. Earthweek SWESx. Tucson, AZ. Poster: *Indicators of soil formation during re-vegetation of mine waste rock materials*.

Rivera, B.D., Jennings, L.L., Maier, R.M., Neilson, J.W. **2015**. Undergraduate Biology Research Presentation. Tucson, AZ. Poster: *Biogeochemical Indicators for Assessing Plant Establishment during Mine Reclamation*.

Jennings, L.L., Anderson, B.A., Phillips, B.M., Voorhees, J., Peterson, M., Tjeerdema, R. **2013**. Northern California Society of Environmental Toxicology and Chemistry. Sacramento, CA. Poster: *Collaborative Monitoring of Contaminates of Emerging Concerns (CEC's) in the Stream Pollution Trends (SPoT) Monitoring Program*.

Jennings, L.L., Anderson, B.A., Phillips, B.M., Voorhees, J., Siegler, K., Katz, S., Tjeerdema, R. **2012**. North American Society of Environmental Toxicology and Chemistry. Long Beach, CA. Poster: *Evaluating the Toxicity of Hypersaline Brine Using Nine California Ocean Plan Toxicity Test Protocols*.

Jennings, L.L., Anderson, B.A., Phillips, B.M., Voorhees, J., Siegler, K., Katz, S., Tjeerdema, R. **2012**. Northern California Society of Environmental Toxicology and Chemistry. Berkley, CA. Poster: *Evaluating the Toxicity of Hypersaline Brine Using Nine California Ocean Plan Toxicity Test Protocols*.

Jennings, L.L., Anderson, S., Los Huertos, M. **2011**. Senior Thesis Presentation. Monterey, CA. Oral Presentation: *Assessing Copper Concentrations of Traffic in the Monterey Peninsula*.

Jennings, L.L., Klein, N. J., Koch, F., Fisher, N.S., Goleski, J.A., Sanudo-Wilhelmy, S. **2011**. American Society for Limnology and Oceanography. San Juan, PR. (ASLO Minority Participation Recipient). Poster: *Impact of Trace Metals and B -Vitamins on Phytoplankton Dynamics during the North Atlantic Spring Bloom*.

Jennings, L.L., Montoya, J.M. **2010**. American Society for Limnology and Oceanography. Portland, OR. (ASLO Minority Participation Recipient). Poster: *Evaluating the Effects of Light Intensity on Timing and Magnitude of N₂ fixation by Trichodesmium*.

Jennings, L.L., Montoya, J.M. **2009**. Society for the Advancement of Chicanos and Native Americans in Science. Dallas, TX. Poster: *Evaluating the Effects of Light Intensity on Timing and Magnitude of N₂ fixation by Trichodesmium*.

Jennings, L.L., Ganguli, P.M., Black, F.J., Paytan, A., Knee, K.L., De Sieyes, N.R., Gray, E., Flegal, A.R. **2008**. Society for the Advancement of Chicanos and Native Americans in Science. Salt Lake City, UT. Poster: *Submarine Groundwater Discharge in Central California*.

Jennings, L.L., Field, J., Harvey, C., Sogard, S. **2006**. California State University, Monterey Bay and Cabrillo College ACCESS Presentations. Seaside, CA. Oral Presentation: *Maternal Effects on Larval Quality in Rockfish*.

Teaching/Volunteer Experiences:

- 2019 WINGS of America 21st Annual “Indian Running” Coaches’ Clinic. “How Running Helps Us Know the Earth: Catalyzing Running into a Career as a soil scientist.” Invited lecture to recruit interest in using running as a way of knowing the land, and of igniting interest of Indigenous students in environmental and soil sciences. Includes a hands on activity of painting using earth pigments and partnering with Comanche artist Yatika Starr Fields.
- 2018 Women in Ecology Webinar Series. “Understanding the Soil Microbiome of Degraded Lands to Reclaim Mine Tailings in Southern Arizona.” Invited Guest lecture at Saint Mary’s College, Indiana.
- 2018 Summer Research Institute Research Experience for Undergraduates. Student: Tasha Nez. “Using soil DNA Biomass Quantification to Analyze Soil Variability at the ASARCO Mission Mine.” Responsibilities included teaching microbiology lab skills & field sampling, guiding student to independently carry out her research project, analyze data and synthesize papers to write her own research manuscript.

- 2018 San Xavier Allottees Association Inc.: Defenders of the Land Series. Tucson, AZ. Panelist. Disused Careers in STEM as a means to protection indigenous land uses and tribal sovereignty.
- 2017 Indigenous People's Day of Health: Achieving Cultural Empowerment through Health and Wellness. Tucson, AZ. Panelist. Discussed wellbeing in higher education, and how to remain healthy, active and connected to our culture while pursuing an advanced degree.
- 2017 Climate Change, Social Justice, and Southwestern Native Communities: How tribes are learning to adapt. Tucson, AZ. Panelist. Discussed extraction industry issues in indigenous communities, and the need for tribal engagement in reclamation planning.
- 2016 Mining Education Days. Topawa, Arizona. Conducted tribal mining modules about the environmental impacts of mining, the chemistry of copper electrolysis, reclamation, and college opportunities at the University of Arizona.
- 2016 Women in Science and Engineering-Environmental Science and Social Justice Science Academy. Tucson, AZ.
- 2016 Native American Student Affairs Graduate Committee. Tucson, AZ.
- 2015-2016 Department of Soil, Water, and Environmental Science Graduate Committee & Graduate Student Representative.
- 2015-2016 Graduate mentor in Native SOAR (Student Outreach, Accessibility and Resiliency Program). University of Arizona. Tucson, AZ. Mentorship program to Native undergraduates for successful steps towards graduate school and medical school. Undergraduates in turn mentor high school students.
- 2015 Summer Youth Mining Education Days. San Xavier and Sif Oidak Districts, Arizona. Educated over 60 students in the Tohono O'odham community about mining, environmental impacts, and college opportunities at the University of Arizona.
- 2015 Invited speaker at the 8th Annual Arizona American Indian Youth Conference on Health. University of Arizona. Tucson, AZ. Discussed barriers to Native American students in college, and keys to achieve success.
- 2015 Teaching socio-cultural and environmental impacts of mining at Tohono O'odham Community College. Sells, AZ. Discussed pros and cons of mining to a tribal community college.
- 2014-2016 University of Arizona, Tucson AZ. Invited speaker to the Native American Science and Engineering Program to discuss how to achieve undergraduate academic success.
- 2014 Biosphere 2-Discovery Night, Oracle, AZ. Public outreach for school children, creating algal slides and teaching microscope use.

- 2014 Agua Fria Health Fair, Humboldt, AZ. Talked to community members about possible metals in their ground water, and taught children about the water cycle on the watershed model.
- 2012 Monterey Bay Aquarium, Monterey, CA. Volunteer for Seashore Sleepovers, and helped with the Rocky shore exhibit.
- 2011 Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS). Salinas, CA.
I volunteered in a community-university partnership program that investigates the relationship of pesticides on pregnant women and their children's health. I helped educate the local community on ways to reduce pesticide exposure and other environmental justice issues present in the Salinas Valley.
- 2007 Coastal Watershed Council (CWC)-Santa Cruz, CA.
I researched watershed policies and created content for the CWC webpage. In addition, I taught water quality monitoring techniques to local school programs.
- 2005 Pelagic Shark Research Foundation- Moss Landing, CA.
I aided in the capturing and tagging of Leopard sharks for seasonal population monitoring.
- 2004 National Marine and Fisheries Services-Oahu, HI.
I performed turtle observation, tagging, recording and ultrasounds on Hawaiian sea turtles in order to observe their migration patterns to the French Frigate Shoals.

Science Communication:

- 2019 "Indigenous Food Knowledges Network shows connections between the Southwest and the Artic." Guest blog post. Our Food and Knowledge Stories. Indigenous Foods Knowledge Network. <https://ifkn.org/food-story/indigenous-food-knowledges-network-shows-connections-between-southwest-and-artic> (July)
- 2019 "Trail Running Women" Podcast on my personal story, trail running, science communication and how its motivated me to become an environmental scientist. (July)
- 2019 "Sunshine Chasers: Science Series" Podcast on being a scientist who trail runs (May).
- 2019 Indigenous Stewards Magazine: Let's SKO (Science, Knowledge, and Outdoors). A publication of the Southwest Environmental Health Science Center, College of Pharmacy. "Running and Land Stewardship." P. 16. (April).
- 2019 The American Geophysics Union "Third Pod from the Sun" Podcast (April)
- 2018 KXCI Thesis Thursday-Lydia Jennings (October).
- 2018 VanguardSTEM Feature: #WCWinSTEM: Lydia Jennings, B.S. (April).

Speaking Engagements:

2019 Sewa U'usim Indigenous Youth Summit. Keynote Speaker. Tucson, AZ.

Professional Workshop Attendance:

2019 Indigenous Foods and Knowledges Network: Food Sovereignty Networking Meeting (June). Anchorage, AK.

2019 7th Annual Rising Voices Workshop: Climate Resilience through Indigenous and Earth Sciences (May). Boulder, CO.

2019 Arizona Indigenous Data Sovereignty Summit (April). Phoenix, AZ.

2019 Indigenous GeosScience Alliance (Jan). Workshop included in depth NEPA training. Phoenix, AZ.

2017 Alan Alda Center for Science Communication (Feb). Tucson, AZ.

Certifications:

2015-2019 Mine Safety and Health Administration (MSHA) Certification. US Department of Labor.

Professional Affiliations:

- Society for the Advancement of Chicanos and Native Americans in Sciences (Vice President of the CSUMB Chapter, 2010).
- 500 Women Scientists-Tucson Pod. Leadership Board.
- Soil Science Society of America
- Society for Mining, Metallurgy and Exploration
- Society of Environmental Toxicology and Chemistry.
- American Indian Science and Engineering Society.
- American Society for Limnology and Oceanography.
- Beta Beta Beta Biological Honor Society.