

Natalie Mayer

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EDUCATION

Master of Environmental Science and Management (Expected June 2025)

Bren School of Environmental Science & Management – University of California, Santa Barbara

Specialization: Water Resources Management

Highlighted Coursework: Sustainable Water Management, Environmental Law & Policy, Water Policy, Watershed Analysis, Pollution Risk Management, Coastal Policy & Management, Groundwater Management

Bachelor of Arts in Biological Sciences (June 2019)

College of Biological Sciences – University of California, Davis

Highlighted Coursework: General and Organic Chemistry, Biochemistry, Microbiology, Molecular Biology, Writing in Health Professions, California Plant Communities

WATER RESOURCES MANAGEMENT EXPERIENCE

Preliminary Watershed Management Plan for the Cahokia-Joaquim Watershed, Santa Barbara, CA

Water Quality Analysis Lead– Sustainable Water Management Course Project (9/2024–12/2024)

- Collaborated with two other group members to develop an 83-page preliminary Watershed Management Plan for the Cahokia-Joaquim Watershed
- Used ArcGIS Pro to create maps of land use, geology, political boundaries, and major point sources
- Analyzed USGS water supply and water use data for both surface and groundwater in each of the twelve counties in the watershed
- Evaluated flood risk and flood control measures that have been taken or overlooked in the region, especially as it relates to racial equity in St. Louis, MO
- Created plots and tables describing the designated uses and water pollutants found in impaired waterbodies, including time series graphs of ambient water quality measurements of fecal coliform and E. coli, turbidity, TSS, lead, mercury, chloride, manganese, and five banned pesticides
- Quantified and created data visualizations of total pounds released by facility and pollutant group for major point sources
- Used U.S. EPA Pollutant Load Estimation Tool (PLET) to estimate nonpoint source pollutant loads
- Evaluated the efficacy of BMPs for urban, agricultural, and forested regions of the watershed
- Provided recommendations to address flood risk, water quality, and racial inequities in water infrastructure in St. Louis, MO and the surrounding areas

World Wildlife Fund, Remote

Freshwater Metrics Intern (6/2024–8/2024)

- Conducted a literature review on agricultural water use and application of nutrients in the Upper Mississippi River Basin
- Analyzed correlation between land use, crop type, and surface water quality in the Upper Mississippi River Basin using QGIS
- Completed a time series and principal component analysis in R of water quality indicators such as temperature, pH, nitrate, phosphate, E. coli, and precipitation
- Conducted a statistical t-test in R to determine if nitrate levels were lower in surface waters where best management practices were implemented
- Wrote a final report outlining my research findings, methodologies, and recommendations
- Designed and delivered a PowerPoint presentation to communicate key insights and project outcomes to a broader audience

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WATER RESOURCES MANAGEMENT EXPERIENCE (CONTINUED)

Southern California Groundwater Shiny App, Santa Barbara, CA

Water Science Data Visualizations Lead– Advanced Data Analysis Course Project (1/2024–3/2024)

- Collaborated with two group members to ensure data accuracy, visual clarity, and user-friendly design across all interactive elements in the Shiny App
- Developed interactive maps and bar plots for groundwater depth and quality, allowing users to explore both spatial and temporal trends in groundwater conditions
- Researched groundwater contaminants (PFOS, PFOA, calcium carbonate, boron, and chloride) and provided detailed explanations of their health risks and maximum contaminant levels
- Created a rough groundwater projection model to estimate future groundwater levels for each county in Southern California
- Provided written content for the Sustainable Groundwater Management Act (SGMA) tab, explaining its purpose, implementation, and impact on groundwater sustainability in California

SCIENCE COMMUNICATION EXPERIENCE

Weil College Preparatory School, Ojai, CA

Science & Math Teacher (8/2019–6/2023)

- Designed and instructed six high school and three middle school STEM courses including Advanced Placement (AP) Biology and Chemistry
- Pitched, created, and instructed new middle school Environmental Science & Global Impact class; syllabus designed as six units (Human Population Growth, Wildlife and Biodiversity Loss, Fossil Fuels and Sustainable Resources, Climate Change and Weather, Ocean Warming and Acidification, Pesticides and Agriculture)
- Facilitated Chemistry and Biology labs once per week during the school year, including acid-base titrations, conductivity of solutions, paper chromatography, growing and observing bacteria cultures, and native plant identification
- Established and maintained a collaborative learning environment for a diverse community of domestic and international students
- Addressed concerns and facilitated open communication between students, parents, and faculty to build trust and support both individual and shared learning goals

UCSB Earth Science Department, Santa Barbara, CA

Teaching Assistant (9/2023–Present)

- Facilitated Physical Geology lab sections, prepared and updated lab materials, updated course website, and provided feedback and support to students and fellow teaching assistants.

Revolution Prep, Remote (Mexico City, MX)

Professional Academic Tutor (8/2021–1/2022)

- Provided academic support for academic subjects such as AP Biology, AP Chemistry, Geometry, Algebra 2, and Pre-Calculus, in addition to preparing students for college admissions exams including the SAT and ACT

Ventura Botanical Gardens, Ventura, CA

Volunteer (6/2019–9/2019)

- Welcomed and checked in visitors, provided information about the gardens and membership program, assisted in the gift shop and with customer service

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MASTER'S GROUP PROJECT EXPERIENCE

Understanding and Mitigating Kelp Forest Losses Caused by Ocean Warming in New Zealand

Data Manager (4/2024–Present)

- Conducted a comprehensive literature review on the dynamics of kelp forests in response to various environmental factors, the life cycles of three canopy-forming kelp species, the economic and cultural importance of kelp especially as it relates to the native Māori people.
- Established and enforced data management policies and workflow for a group of five members using a combination of GitHub, Google Drive, and Microsoft Teams
- Used Microsoft Excel and R to wrangle ten datasets of biological surveys conducted along the coastal waters of New Zealand; and conducted exploratory data analysis on changes in Phaeophyta, Rhodophyta, Chlorophyta, and relevant herbivorous species
- Conducted statistical analyses such as Kruskal-Wallis, Wilcoxon, and nMDS to determine how seaweed at different sites changed over time in response to changes in sea surface temperature, geographic location, and depth
- Created data visualizations displaying the results of statistical analyses, highlighting the impacts of climate change on both human and aquatic communities in coastal New Zealand.
- Designed and delivered presentations for internal progress updates with our advisors and client, formal academic faculty review of our methods and preliminary results, and high-level overview of our process and conclusions for a non-scientific public audience

SKILLS & CERTIFICATIONS

Computer Skills: Microsoft Office (Word, Excel, PowerPoint, Outlook, Teams), Google Workspace (Drive, Docs, Sheets, Slides, Calendar, Meet), Slack, RStudio, Shiny, Quarto, ArcGIS Pro, QGIS

Geospatial Analysis Skills: Proficient in using tools (ArcGIS Pro, QGIS, and RStudio) to wrangle and tidy geospatial data; reproject coordinate reference systems; perform habitat suitability analysis and network analysis; conduct zonal statistics; create thematic maps such as choropleths and interactive maps

Tabular Data Analysis and Visualization Skills: Strong background using Microsoft Excel and R wrangling and tidying tabular data; creating clear and engaging data visualizations with ggplot2 and extension packages; conducting statistical analyses and hypothesis testing including ANOVA, t-tests, Kruskal-Wallis tests, Wilcoxon tests, non-metric multidimensional scaling (nMDS), and principal component analysis (PCA); and building interactive data applications and websites using Shiny and Quarto

Environmental Policy & Regulatory Knowledge: Experience in interpreting and applying federal and California environmental laws and regulations including National Environmental Policy Act (NEPA), Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), Clean Air Act (CAA), California Environmental Quality Act (CEQA), Sustainable Groundwater Management Act (SGMA), and Porter-Cologne Water Quality Control Act

Language Skills: Basic Spanish (Completed Summer Intensive Spanish Program at Middlebury Institute of International Studies in Monterey, CA in 2016 and lived in Mexico City for 6 months in 2021)

Certifications: Grade 2 Distribution Operator and Water Treatment Operator Certification (In Progress), University of Colorado Boulder Certificate in Water in the Western United States, PADI Advanced Open Water Diver, IBM Data Science Professional Certificate, University of Florida Certificate in Sustainable Agriculture Land Management