

Robert A. Rioux

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80 Edwards St
New Haven, Connecticut

Education

Yale Graduate School of Arts and Sciences

Doctor of Philosophy, Environment

New Haven, CT

May 2028

Yale School of the Environment

Master of Environmental Science

New Haven, CT

May 2023

Focus: Water Resource Science and Management

Hamilton College

Bachelor of Arts

Clinton, NY

May 2021

Major: Environmental Studies

Minor: Government

Honors and Awards

The Jubitz Family Endowment for Research Internships, Yale School of the Environment

2022

Summer Science Research Fellowship, Hamilton College

2020

Hamilton College Dean's List, Hamilton College

2018

Relevant Experience

Water Learning Community and Fresh and Salty Student Interest Group

New Haven, CT

Co-Lead

August 2022 – May 2023

- Collaborated with students, professors, and administrators to enhance water-centered learning at YSE.
- Planned and hosted speaker events surrounding topics, issues, and careers in the water sector.
- Implemented professional development programming for graduate students interested in water careers.

Yale School of the Environment

New Haven, CT

Graduate Research Assistant – Farrell Project

January 2022 – January 2023

- Conducted intensive background research into social issues in the Rocky Mountain West, including mental health and suicide and militarized redoubts in Idaho, Montana, and Wyoming
- Curated a bibliography of sources using the Zotero citation management software
- Conducted semi-structured interviews with researchers and National Park Service employees
- Organized and studied primary sources and archival records relating to suicide in National Parks

Yale School of the Environment

New Haven, CT

Graduate Research Assistant – Saters Lab

March 2022 – September 2022

- Implemented early-stage protocols and methods for a long-term study to evaluate and demonstrate the theoretical promise of enhanced silicate weathering as a carbon dioxide removal method
- Installed and maintained an ISCO rain gauge and autosampler, Campbell Scientific pressure transducers, Eureka Manta sonde, Solinst well infrastructure, and a custom-designed v-notch weir
- Collected, processed, and analyzed groundwater, stream water, and stormwater samples for intensive chemical analyses
- Developed code in R and MatLab to analyze and model various forms of chemical and hydrologic data
- Collaborated with federal government officials (USGS) and other researchers across Yale University

Yale School of the Environment

New Haven, CT

Graduate Research Assistant – Benoit Lab

June 2021 – March 2022

- Conducted independent research under the guidance of an advisor into the impacts of road salt on small urban watersheds
- Analyzed how chloride is stored in soils and estimated the impact this had on stream chloride levels through various analytical chemical approaches (ion chromatography, spectrophotometry, conductivity measurements, titrations).
- Conducted field-based measurements and estimates of road salt application at the watershed scale
- Collaborated with lab partners on other research projects, supporting their research into microplastics and green infrastructure effectiveness in removing anthropogenic litter from urban streams.

Onondaga Environmental Institute

Syracuse, NY

Research Intern

December 2020 – January 2021

- Conducted experiments and water sampling in furtherance of research into the Tully Mudboil Depression Area
- Aided in a long-term study on the impacts of road salt on the tributaries of Onondaga Lake, including conducting a lit review and writing the broader impact and intellectual merit impact abstract

NYS Department of Environmental Conservation – Ecosystem Health

Rome, NY

Aquatic Toxicant Research Unit Intern

June 2020 – August 2020

- Investigated the impact of PFAS contamination on wildlife populations in wetlands and streams downstream of an airbase
- Collected measurements and tissue samples from bird populations, harvested fish utilizing various methods (electrofishing, gillnetting, seine fishing), and conducted macro-invertebrate collection.

Onondaga County Soil and Water Conservation District

Onondaga County, NY

Water Chestnut Crew Leader

June 2019 – August 2019

- Led a dynamic four-person crew to remove the invasive Asian water chestnut from the Seneca and Oneida Rivers and Cross Lake in Central New York. Our efforts resulted in the removal of over 28,000 pounds of water chestnut.
- Contacted and coordinated with home and business owners for permission to gain access to and operate from their property and coordinated pulling schedules with multiple fire districts (in case of emergency)
- Managed and prepared the other three crew members; duties included scheduling CPR/AED, Boater's Safety, and lifeguard pre-certification training for the Crew.

City of Syracuse Water Department

Skaneateles, NY

Watershed Inspector

June 2018 – August 2018

- Conducted routine patrols and intensive on-foot inspections within the Skaneateles Lake Watershed of individual properties, looking for Onsite Waste Treatment System failures
- Inspected construction sites within Watershed in accordance with NYS regulations to ensure proper environmental protection practices were in place
- Collected water quality samples and field-tested water turbidity to identify at-risk areas that would require further analysis

Leadership and Teaching Roles

BIOMES Student Committee

New Haven, CT

Member

September 2023 – Ongoing

- Contributed to the committee for BIOMES (Bridging Issues & Optimizing Methods in Environmental Studies), YSE's flagship weekly seminar series.
- Collaborated with students and administrators to bring a wide array of speakers to YSE to speak on pressing environmental research, methods, and opportunities.
- Hosted speakers, including faculty from visiting universities, deans of colleges, and other distinguished guests.

Branford College

New Haven, CT

Graduate Affiliate

October 2023 – Ongoing

- Advised Branford College undergraduates on their studies, careers, and grad school.
- Planned and hosted events for Branford College residents, including career panels, study methods, and school-life balance.
- Served as a resource to students to provide feedback on writing and professional development opportunities.

Yale School of the Environment Research Community

New Haven, CT

Doctoral Fellow

August 2024 – June 2025

- Collaborated with students, professors, and administrators to enhance the curriculum, community, and experience of YSE's research community members (including research-based masters students, PhD students, and post-doctoral researchers).
- Implemented professional development programming for PhD students interested in how to improve their research while at Yale and how to prepare for their desired career path upon graduation (academia, government, non-profits, and industry).
- Planned and facilitated YSE's Annual Research Day, the end-of-year event where Masters students, PhDs, and other members share their research to the broader YSE Community, and a graduation requirement for YSE Masters students.

The Physical Science of Climate Change

New Haven, CT

Teaching Fellow

January '23, '24, '25 – May '23, '24, '25

- Supported a large, diverse class of approximately 90 graduate and undergraduate students across Yale University
- Taught supplemental information to students during office hours.
- Participated as a member of a six-person teaching team

Natural Disasters

New Haven, CT

Teaching Fellow

August 2024 – December 2024

- Supported one of the largest and most popular undergraduate courses at Yale University of 270 undergraduate students
- Contributed to a large teaching team of 7 teaching fellows; proctored exams and graded weekly assignments for the course

Climate Change Impacts on Freshwater Ecosystems

New Haven, CT

Teaching Fellow

August 2023 – December 2023

- Facilitated a class with a visiting faculty member at Yale University on a specialized topic for other graduate students.
- Provided feedback and aid in research project development and proposals for the course.
- Managed the course's Canvas page, selected class readings, and taught, under supervision, two classes.

Corporate Water Risk and Strategy Workshop

Teaching Fellow

New Haven, CT

May 2022 – December 2022

- Facilitated a student-led course that provides a platform for students across Yale to collaborate and work with a client on a current water-related business or supply-chain question.
- Managed project teams to ensure projects were completed on time and within scope. Designed and staffed six project work streams with 20 students across Yale University.

Hamilton Aquaponics

President

Clinton, NY

September 2018 – May 2021

- Implemented a new aquaponics system at Hamilton College to sustainably produce lettuce and tilapia as a demonstration of sustainable food practices
- Created and developed this niche interest into an active 30-member club on campus.
- Meet regularly with other members of the Executive Board, host club-wide meetings, conduct regular maintenance of the system, and create budgets for funding every semester

Relevant Courses

Hamilton College

Clinton, NY

- Environmental Geology, Hydrogeology, Soils and the Environment, Climate Change, GIS for Geoscientists, Cells to Ecosystems, Ecology, Conservation Biology, Microbial Ecology, Principles of Chemistry, Gateway to Environmental Studies, Environmental Data Science, Intro Science of Food

Yale School of the Environment

New Haven, CT

- Natural Science Research Methods, Intro to Environmental Chemistry, Landscapes and Ecosystems, Watershed Cycles and Processes, Aquatic Chemistry, Land Use Law and Environmental Planning, Corporate Water Risk, Carbon Dioxide Removal, Data Exploration and Analysis, Greenhouse Gas Accounting, Carbon Dioxide Removal as Decarbonization, Applied Math for Environmental Studies, Doctoral Seminar, Multivariate Statistics, Aqueous Geochemistry, Introductory Machine Learning, Ecology of Landforms

Skills & Interests

Skills:

- *Software:* ArcGIS, QGIS, PyCharm, R-Studio, MatLab, Microsoft Office Suite
- *Scientific Instruments:* Shimadzu TOC Analyzer, Thermo DeltaPlus XP, Fischer Scientific Flash IRMS, Metrohm Ion Chromatograph, Perkin Elmer ICP-MS NexION 5000, Mettler Toledo InMotion Auto-Titrator

Interests:

- Watershed-based research; climate change and anthropogenic pollution impacts on freshwater quality; natural carbon capture and carbon dioxide removal; participatory action and stakeholder-based research

Presentations

- **R. Rioux**, F. Sun, Q. Zacharias, W. Tatge, W. Miller-Brown, J. B. Shanley, N. Planavsky, P. A. Raymond, J. E. Saiers. Catchment-Scale Evaluation of Enhanced Silicate Weathering Effects on In-stream Concentration-Discharge Dynamics. AGU Annual Meeting. December 9, 2024.
- F. Sun, **R. Rioux**, W. Miller-Brown, J. Wang, Q. Zacharias, W. Tatge, J. B. Shanley, N. Planavsky, P. A. Raymond, J. E. Saiers. Watershed Responses to Enhanced Rock Weathering: Insights from Stream and Groundwater Chemistry. AGU Annual Meeting. December 9, 2024.
- Q. Zacharias, F. Sun, **R. Rioux**, W. Miller-Brown, W. Tatge, S. Shaheen, N. Planavsky, P. A. Raymond, J. E. Saiers. Investigating Soil Fertility Responses from Enhanced Rock Weathering for Carbon Capture in a Whole Watershed Experiment. AGU Annual Meeting. December 9, 2024.
- W. Tatge, S. Shaheen, F. Sun, W. Miller-Brown, **R. Rioux**, Q. Zacharias, J. E. Saiers. A Multi-Physics Watershed Model to Quantify the Fate of Enhanced Rock Weathering Products. AGU Annual Meeting. December 9, 2024.
- **R. Rioux**, F. Sun, Q. Zacharias, W. Tatge, W. Miller-Brown, J. B. Shanley, N. Planavsky, P. A. Raymond, J. E. Saiers. Influence of Enhanced Silicate Weathering on Streamwater Quality: A Watershed Experiment. ERW Annual Meeting. April 27, 2024
- **R. Rioux**, F. Sun, Q. Zacharias, W. Tatge, W. Miller-Brown, J. B. Shanley, N. Planavsky, P. A. Raymond, J. E. Saiers. Influence of Enhanced Silicate Weathering on Streamwater Quality: A Watershed Experiment. EGU Annual Meeting. April 15, 2024
- **R. Rioux**. Skaneateles Lake Watershed Land Use Scenario and Nutrient Modelling. AAG Annual Meeting. April 7, 2021. Virtual Poster.

Publications

- F. Sun, **R. Rioux**, W. B. Miller-Brown, B. Shrestha, J. B. Shanley, N. J. Planavsky, P. A. Raymond, J. E. Saiers. 2025. Long-term Trends of Streamwater Chemistry in a Headwater Watershed: Impacts from Anthropogenic and Climatic Factors. *Science of the Total Environment*. <https://doi.org/10.1016/j.scitotenv.2025.179017>.
- **R. Rioux** and A. Strong. 2023. Scenario-based land use modeling for nutrient management in the Skaneateles Lake Watershed. *Environmental Challenges*. <https://doi.org/10.1016/j.envc.2023.100739>.