Madeline E. Gorchels

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EDUCATION

Master of Environmental Science and Management, 3.88 GPA (June 2020)

Water Resources Management Specialization | Environmental Data Science Focus

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

Highlighted Coursework: Water Policy, Environmental Law & Policy, Environmental Politics & Policy, Watershed Analysis, Watershed Quality Management, Equity & the Environment, Economics of Environmental Management, Environmental Modeling, Advanced Data Analysis, Geographical Information Systems

Bachelor of Arts in Biological Sciences | Minor in Geosciences, 3.51 GPA (May 2016)

Wellesley College, Wellesley, MA

Study Away: Semester in Environmental Science, Woods Hole Marine Biological Laboratories, MA (8/14–12/14)

MASTER'S WATER RESOURCES GROUP PROJECT

Evaluating the Multiple Benefits of Rainwater Capture in Austin, TX, Santa Barbara, CA(4/19–5/20)

Client: Pacific Institute | Role: Outreach Manager

- Demonstrated urban heat island and energy benefits from adopting green infrastructure with a 4-person team
- Designed strategic visualization of project methods and results in GIS, R, PowerPoint, and Wix to ensure approach and key takeaways are clear to non-technical managers and reproducible for future applications
- Created policy recommendations to make financing of future green infrastructure projects more equitable
- Managed water data for analysis to calculate the energy benefits of distributed stormwater infrastructure for the City of Austin to inform future water infrastructure investments

ENVIRONMENTAL & RESEARCH EXPERINCE

Environmental Resource Management Intern, Santa Barbara County Water Agency, CA (1/20–6/20)

- Designed and executed outreach to residential horse owners communicating technical information on reducing pollution loading to local creeks to protect water quality and comply with the County's NPDES
- Overhauled 200-page manual on water conscious landscaping to include modern formatting and water polices
- Coordinated with 19 water agencies to execute water efficiency programs and provide technical assistance to those agencies by collecting, visualizing, and analyzing water data in Microsoft Excel and Access
- Established new spatial data analysis system to determine budget requirements of recent trash legislation
- Collected and managed water data to build documents demonstrating the county's compliance to water quantity and water quality regulations

Multi-Benefit Intern, Pacific Institute, Oakland, CA (6/19–1/20)

- Analyzed 50+ publications on water management, environmental equity, and nature based solutions to be included in an outward-facing resource library for use by water managers in project benefit evaluations
- Co-authored two 30+-page reports on operationalizing multiple benefit analysis in water projects to guide the inclusion of equity and urban heat island in future framework applications
- Calculated energy offsets from a rain capture program for the City of Austin, TX using an Excel model to show the additional benefits from adopting green infrastructure for stormwater management

Earth & Environmental Science Teaching Assistant, **UC Santa Barbara**, Santa Barbara, CA (9/18-4/20)

- Instructed and managed 60-80 students in classroom and laboratory settings
- Developed 1-2.5 hour lessons including lectures, interactive activities, and labs
- Exceeded department excellence rating by 5%-20%
- Held extra volunteer office hours to help students understand scientific writing and analysis

Art & Science Volunteer, Cambridge School Volunteers, Cambridge, MA (7/18-8/18)

- Worked with volunteers to teach scientific & artistic journaling to a local school group at Fresh Pond

Assistant Manager, **Pacifica Coffee**, Corvallis, OR (4/17-6/18)

- Managed organic wholesale coffee business with 30+ clients
- Organized and managed temporary hires
- Rebuilt 60% of website by rewriting content, creating graphics, and editing product functions; Started and managed 2 new social media pages

Aquatic Research/Teaching Assistant, Woods Hole Marine Biological Laboratories, MA (8/16–1/17)

- Organized 20 environmental management independent student research projects with a team of 3 TAs to provide opportunities for undergraduates to address pressing environmental challenges to Cape Cod, MA
- Conducted and trained students to perform nutrient analysis, wastewater analysis and treatment, plankton identification, reagent preparation and data compilation from analytical instruments

Senior Research Assistant, **Wellesley College**, Wellesley, MA(9/15 - 6/16)

- Oversaw weekly research schedule, procedures, and three personnel as part of an NSF-funded international collaborative conservation effort at the world heritage site, Lake Baikal
- Created new protocol for dissection and analysis of a microscopic organism for use by aquatic ecologists to analyze/evaluate zooplankton functional diversity, enabling the creation of publishable research

SKILLS

Visualization & Publishing: Adobe Creative Suite, Microsoft PowerPoint, Word; RShiny, Wix, Blogdown
Technical: Literature Reviews, Sterile Technique, Water Quality Sampling & Analysis, Watershed Analysis, Environmental Modeling; Confocal, TEM, Confound, Dissecting Microscopy
Data Analysis: Statistical and Spatial Analysis, Data Management; ArcMap, QGIS, R, SQL, Beginning Python, BASINS, Access, Excel

PUBLICATIONS

Diringer, Sarah, Heather Cooley, Morgan Shimabuku, Sonali Abraham, **Madeline Gorchels**, Cora Kammeyer, and Robert Wilkinson. 2020. Incorporating Multiple Benefits into Water Projects: A Guide for Water Managers. Oakland, Calif.: Pacific Institute.

Diringer, Sarah, Morgan Shimabuku, Heather Cooley, **Madeline Gorchels**, Jennifer Walker, and Sharlene Leurig. 2020. Scaling Green Stormwater Infrastructure Through Multiple Benefits in Austin, Texas. Oakland, Calif.: Pacific Institute.

Gorchels M., Culbert K., Odion K., Brown, A. 2020. Evaluating the Multiple Benefits of Urban Rainwater Capture in Austin, TX. Santa Barbara, Calif: Bren School of Environmental Science & Management.

Bowman, L. L., MacGuigan, D. J., **Gorchels, M. E.**, Cahillane, M. M. & Moore, M. V. Revealing paraphyly and placement of extinct species within Epischura (Copepoda: Calanoida) using molecular data and quantitative morphometrics. *Molecular Phylogenetics and Evolution* **140**, 106578 (2019).

Iverson, E. A., Goodman, D. A., **Gorchels, M. E.** & Stedman, K. M. Genetic Analysis of the Major Capsid Protein of the Archaeal Fusellovirus SSV1: Mutational Flexibility and Conformational Change. *Genes* **8**, 373 (2017).

Iverson, E. A., Goodman, D. A., **Gorchels, M. E.** & Stedman, K. M. Extreme Mutation Tolerance: Nearly Half of the Archaeal Fusellovirus Sulfolobus Spindle-Shaped Virus 1 Genes Are Not Required for Virus Function, Including the Minor Capsid Protein Gene vp3. *Journal of Virology* **91**, (2017).