JACKSON D. BARNETT

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EDUCATION

M.S. IN ENVIRONMENTAL STUDIES 2023-2025

Virginia Commonwealth University, Richmond, VA
Committee: Drs. Paul Bukaveckas, Leigh McCallister, Daniel McGarvey, and James Vonesh
GPA: 4.0

B.S. IN INTEGRATED SCIENCE AND TECHNOLOGY (ABET ACCREDITED, PRE-LAW ADVISING PROGRAM) 2022

James Madison University, Harrisonburg, VA
Concentrations: *Environment and Sustainability*, *Energy and Environmental Design*
GPA: 3.898 (*Magna Cum Laude*)

RELEVANT RESEARCH

MASTER'S THESIS PROJECT – ASSESSMENT OF WATER CLARITY DRIVERS IN VIRGINIA RESERVOIRS 2023-2025

This study consists of two separate parts which make up my comprehensive master's thesis project. Part one consists of analyzing long term trends of total suspended solids (TSS), Chlorophyll-a (CHLa), and Secchi Depth for 100 reservoirs monitored by the Virginia Department of Environmental Quality (VDEQ) since 1970. Part two of this study is a field study that will collect Chromophoric Dissolved Organic Matter, light attenuation and nutrient data in conjunction with TSS, CHLa, and Secchi Depth data at seven reservoirs. The results from each part of this study will complement each other, allowing for an in-depth analysis of long term and spatial trends in reservoir water clarity. This analysis will help characterize the relative importance of sediment, algae, and dissolved color on water clarity and establish connections between light attenuation and Secchi depth to be used to infer photic depths in VDEQ data.

WILDER SCHOOL OF GOVERNMENT & PUBLIC AFFAIRS – VIRGINIA COMMONWEALTH UNIVERSITY 2023-2025

Served as an aquatic environmental expert under Dr. Shruti Syal at VCU Wilder School of Government and Public Affairs, contributing to the development of a network map addressing WaSH (Water, Sanitation, Hygiene) issues in Delhi, India. Focused on the impact of untreated sewage and stormwater drains on ~1.5 million slum residents along the Yamuna River. Conducted literature reviews on key actors, policies, laws, and legislation to inform the map, highlighting complex interactions between stakeholders and informal settlements. The open-access map and paper are expected to be published in 2026.

INTEGRATED SCIENCE & TECHNOLOGY – SENIOR CAPSTONE RESEARCH 2021-2022

Worked under a Virginia Department of Environmental Quality (VDEQ) TMDL grant to design, install, and maintain a remote water quality monitoring station in the impaired Little Calfpasture River (Rockbridge County, VA). Analyzed water quality data to assess the causes, contributors, and stressors associated with the stream's impairment. Conducted lab and field tests to assess stream wide trends, ensure quality assurance, determine on-site water quality, and draw correlations between lake conditions and sediments present. Developed SOPs, training materials, and QA/QC procedures for project partners.

DEPARTMENT OF ENVIRONMENTAL QUALITY/JAMES MADISON UNIVERSITY – RESEARCH ASSISTANT 2022

Assisted in the formation of a stressor analysis report of three impaired streams for the Virginia Department of Environmental Quality to be used for TMDL development. Evaluated historical nutrient, benthic, feeding group, ion, habitat, solids, and general field data to identify potential stressors. Utilized EPA's Causal Analysis Decision Diagnosis Information System to classify potential stressors.

AWARDS AND RECOGNITIONS

Virginia Water Environment Association/WaterJAM YP Poster Contest Winner	$1,000
Virginia Water Resources Research Center Student Grant (2024-2025)	$10,000
Virginia Lakes and Watersheds Association Scholarship Award (2024)	$2,000
James Madison University President's List (Fall/Spring 2020, Spring 2022, Fall 2022)	--
James Madison University Dean's List (Fall 2019, Spring 2021, Fall 2021)	--
EPA Watershed Management Training Certificate (2022)	--
James Madison University Second Century STEM Scholarship (2019-2022)	75% Tuition
Rockingham Educational Foundation Inc. Scholarship (2019)	$1,000

PROFESSIONAL EXPERIENCE

GRADUATE RESEARCH ASSISTANT

School of Gov. and Public Affairs, Virginia Commonwealth University, Richmond, VA 2024-current

GRADUATE RESEARCH ASSISTANT

Center for Environmental Studies, Virginia Commonwealth University, Richmond, VA 2023-current

GRADUATE TEACHING ASSISTANT (INSTRUCTOR)

Department of Biology, Virginia Commonwealth University, Richmond, VA 2023-current

UNDERGRADUATE RESEARCH ASSISTANT

Integrated Science and Technology Department,
James Madison University/Department of Environmental Quality, Harrisonburg, VA 2021-2022

OPERATIONS SUPERVISOR

University Recreation Center, James Madison University, Harrisonburg, VA 2021-2022

TEACHING ASSISTANT (GRADER)

Integrated Science and Technology Department, James Madison University, Harrisonburg, VA 2021-2022

COURSES TAUGHT

Ecology Laboratory – BIOZ 317 (undergraduate course, lab instructor)

Virginia Commonwealth University, Department of Biology
- Fall 2023: Enrollment = 22
- Spring 2024: Enrollment = 22
- Fall 2024: Enrollment = 22
- Spring 2025: Enrollment = 22

Energy Fundamentals (Thermodynamics) – ISAT 310 (undergraduate course, grader)

James Madison University, Integrated Science and Technology Department
- Fall 2022: Enrollment = 20+

Energy Issues – ISAT 212 (undergraduate course, lab grader)

James Madison University, Integrated Science and Technology Department
- Fall 2021: Enrollment = 20+

PROFESSIONAL ACTIVITIES

GRADUATE STUDENT ASSOCIATION

Virginia Commonwealth University, Richmond, VA 2023-current

DEAN STUDENT ADVISORY TEAM

College of Integrated Science and Engineering, James Madison University, Harrisonburg, VA 2021-2022

MENTOR COLLECTIVE TEAM

College of Integrated Science and Engineering, James Madison University, Harrisonburg, VA 2021-2022

THETA TAU PROFESSIONAL FRATERNITY

James Madison University, Harrisonburg, VA 2019-2022

UREC STUDENT EMPLOYEE HIRING COMMITTEE

University Recreation Center, James Madison University, Harrisonburg, VA 2022

APPLICABLE SKILLS

R, Rstudio, ArcGIS Pro, ESRI Web, YSI EcoWatch, Campbell Scientific PC400, LoggerNet, EES, Stella Architect/Pro, Lab View, BEopt, Python, Fusion 360, Inkscape

RELEVANT COURSEWORK

Environmental Data Literacy – ENVS 543

Developed quantitative skills for the visualization, manipulation, analysis and communication of large environmental data sets. Focused on the use of the Rstudio (Markdown/Quarto documents with linked GitHub repositories) to conduct environmental data analysis, interpretation and communication, using real-time water quality and atmospheric data.

Introduction to Geographic Information Systems – ENVS 521

Involved creating and using geographically referenced databases for urban and environmental analysis and planning. Included geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design.

Environmental Data Literacy – ENVS 603

Provided an understanding of statistical and research methods as they apply to environmental research. Emphasized the application of current data analysis methodologies, including the graphical display of summary data, statistical modeling and prediction, and geographic information systems using R.

Topics in Environmental Studies: Hydrology – ENVS 591

Focused on the fundamental concepts of groundwater flow and contaminant transport with an emphasis toward environmental issues such as waste disposal, surface water hydrology, groundwater hydrology and wells, environmental impacts and hydrogeological systems.

Survey in Environmental Studies – ENVS 601

Provided a foundational understanding of issues central to environmental studies. Addressed the theoretical and scientific basis for a variety of pertinent issues, including: and water quality and quantity, pollution prevention, environmental law and policy, population growth, global climate change, conservation, and human and ecological health.

Virginia Energy Transition Modeling – ISAT 390/391

Utilized systems modeling (*Stella Architect/Professional*) to create a historically accurate and data-based predictive model of Virginia's energy generation development and use through 2050 based on the Virginia Clean Economy Act. Students practice holistic problem-solving approaches to analyze and propose solutions for complex problems that involve a mix of scientific, technological, and societal elements. The course uses a variety of case studies that represent real-world problems that significantly impact society. Students explore the system dynamics from which the problem emerges and evaluate both short- and long-term consequences of possible solutions.

Natural Resource Management – ISAT 424

Coursework involved the creation of management plans for early succession ecosystems, identification/removal of invasive shrubs and trees, and observations of local dairy, corn, and poultry nutrient management systems/BMPs.

Environmental and Energy Design – ISAT 480

Independent study that involved performing energy audits, modeling energy use, and analyzing stormwater BMPs of James Madison University campus buildings.