Madeleine M. Bolick

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Education

2024 **GISP Certification,** GIS Certification Institute

2023 **Ph.D.**, Forest Resources, Department of Forestry and Environmental Conservation, **Clemson University, Clemson, SC.**
Concentration: Environmental Data Science
Dissertation: "Innovations in Geospatial Technologies for Environmental and Water Resource Protection"

2018 **M.S.**, Environmental Management, **Duke University, Durham, NC.**
Concentration: Ecosystem Science and Conservation
Certificate: Geospatial Analysis

2016 **B.S.**, *Magna Cum Laude*, Biological Sciences, **Clemson Honors College, Clemson University, Clemson, SC.**

Employment and Professional Experience

2024 - Present **Lecturer,** College of Architecture, Art, and Construction, Clemson University

2023 - Present **Senior GIS Specialist,** Bolton & Menk, Greenville, SC, part-time

- Comprehensive and Downtown Master Plans, Town of Matthews, NC
- GIS Inventory for Stormwater Features, Horry County, SC
- Tyger River Confluence Recreation Regional Plan, Upstate Forever
- Utility Infrastructure Management & ArcGIS Online Management, Town of Hillsborough, NC
- Water and Sewer Consumption Analysis, Town of Hillsborough, NC
- Sewer Growth Feasibility Analysis, Oconee Joint Regional Sewer Authority, SC
- ArcGIS Online Management, Bridging Pennsylvania Constructors, Pennsylvania
- Lead Service Line Inventory, Iredell County, NC; Hillsborough, NC
- Neighborhood Characteristic Overlay Analysis, City of Charlotte, NC
- Site Suitability Analysis, City of Rochester, MN
- ArcGIS Online Management & Zoning Analysis, Town of Rolesville, NC; Blythewood, SC
- Parks & Recreation Master Plans, Cabarrus County, NC; Jasper County, SC; Mauldin, SC
- Sewer Growth Planning Analysis, South Carolina Water Utilities, Columbia, SC
- Watershed Based Plan, Coharie Tribe, NC
- Water and Sewer Master Plan, Beaufort Jasper Water Sewer Authority, Okatie, SC

2023 - 2024 **Adjunct GIS Lecturer,** Nieri Department of Construction, Development, and Planning, Clemson University

2022 - 2023 **GIS Specialist Intern**, Bolton & Menk, Greenville, SC

2021 - 2023 **GIS Specialist Consultant,** Self-Employed
Clients: ViewPro GIS, Clemson University Center for Watershed Excellence, City of Greer

2020 – 2023	**Graduate Teaching Assistant**, GIS for Natural Resources, Department of Forestry and Environmental Conservation, Clemson University
2020 – 2023	**SC Adopt A Stream Trainer,** Clemson University
2018 – Present	**Board Member,** Friends of the Reedy River, Greenville SC Treasurer 2020-2023
2018 – 2020	**GIS Coordinator,** City of Greer, Greer SC
2017 – 2018	**Conservation and Policy Intern,** Audubon North Carolina, Chapel Hill, NC
2018	**Graduate Teaching Assistant**, Wildlife Surveys, Duke University
2017	**Graduate Teaching Assistant,** Big Cat Research Group, Duke University
2015 – 2016	**Animal Care Technician,** Godley-Snell Research Center, Clemson University
2015 – 2016	**Undergraduate Research Assistant,** Squirrel Contraception Project, Clemson University
2014 – 2015	**Undergraduate Teaching Assistant,** Vertebrate Biology, Clemson University
2013 – 2014	**Undergraduate Research Assistant**, Wildlife and Fisheries Department, Clemson University

Awards, Honors and Scholarships

2023	**ESRI Development Student of the Year Award,** Clemson University
2022-2023	**Clemson University College of Agriculture Forestry and Life Sciences (CAFLS) Outstanding Graduate Teaching Assistant Award**
2016 – 2018	**NSOE Merit-Based Scholarship**
2012 – 2016	**Leadership Circle Scholarship**
2012 – 2016	**DB Dubose Scholarship**
2012 – 2016	**Life Scholarship**

Teaching Experience **(Total number of students taught = 322)**

CRP 4300: The Nature of GIS, Clemson University **Total number of students = 23 students**
Spring 2023 (18 students), Fall 2024 (5 students), Spring 2025 (18 students)

CRP 8040: Intro to GIS for Planning & Policy, Clemson University **Total number of students = 21**
Fall 2023 (10 students), Fall 2024 (11 students)

CRP 8890: Advanced GIS, Clemson University **Total number of students = 8**
Spring 2025 (8 students)

FOR 4341/6341: GIS for Natural Resources Lab, Clemson University: **Total number of students = 190**, Fall 2020 (22 students); Spring 2021 (23 students), Fall 2021 (52 students), Spring 2022 (43 students), Fall 2022 (25 students), Spring 2023 (25 students)

ENV 706: Wildlife Surveys, Duke University: **Total number of students = 11**, Spring 2018

ENV 790-126: **Big Cats Decline Research**, Duke University: **Total number of students = 24**, Spring 2017 (13 students), Fall 2017 (11 students)

BIOL 3070: Vertebrate Biology Lab, Clemson University: **Total number of students =35**, Fall 2014 (17 students), Fall 2015 (18 students)

Specialized Teaching/Computer Training

April 2023 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
Greenville, SC
In-person workshop presentation and in-field training
7 students

Nov 2022 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
Greenville SC
In-field training
4 students

Sept 2022 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
City of Greer, Greer, SC
In-person workshop presentation and in-field training
5 students

July 2022 **Pleasant Valley Connection Water Quality Monitoring Field Trip**
Lake Conestee Nature Preserve, Greenville, SC
Field demonstration and lesson on measuring dissolved oxygen
40 students (kindergarten through high school)

Feb 2022 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
Greenville Zoo, Greenville, SC
In-person workshop presentation and in-field training
17 students

Nov 2021 **Creating a 3D Digitial Twin with LiDAR Data**
Clemson University, Clemson, SC
8 students

Feb 2021 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
Greer, SC
Online course presentation and in-field training
4 students

Nov 2020 **Certification Course: SC Adopt-A-Stream Chemical and Bacteria**
Clemson University, Clemson, SC
Online course presentation and in-field training

5 students

Membership in Professional, Academic and Scholarship Societies

Women in GIS

Women in Water Outdoors

South Carolina Foothills Arc User Network

Publications (4)

Bolick, M.M., Post, C.P, Naser, M.Z., Forhanparast, F., Mikhailova, E.A. Evaluating Urban Stream Flooding with Machine Learning, LiDAR, and 3D Modeling. *Water*. **2023**, *15*. 10.3390/w15142581

Bolick, M.M.; Post, C.P.; Naser, N.Z.; Mikhailova, E.A. Comparison of Machine Learning Algorithms to Predict Dissolved Oxygen in an Urban Stream. *Environ Sci Pollut R*. **2023**, *30*. 10.1007/s11356-023-27481-5

Bolick, M.M.; Post, C.J.; Mikhailova, E.A. Teaching Innovation in STEM Education using an Unmanned Aerial Vehicle (UAV). *Education Sci*. **2022**, *12*. 10.3390/educsci12030224

Bolick, M.M.; Post, C.J.; Mikhailova, E.A.; Zurqani, H.A.; Grunwald, A.P.; Saldo, E.A. Evaluation of Riparian Tree Cover and Shading in the Chauga River Watershed Using LiDAR and Deep Learning Land Cover Classification. *Remote Sens*. **2021**, *13*, 4172. https://doi.org/10.3390/rs13204172

Publications in Review (0)

Abstracts, Poster, and Oral Presentations (5)

Bolick, M.M., Amidon, K. 2025 The Power of Presence and the Art of Stakeholder Engagement. National Association of Environmental Professionals, Charleston, SC. April 2025.

Bolick, M.M. 2024 Machine Learning Applications in GIS. Geospatial Administrators Association Fall Summit, Myrtle Beach, SC. November 2024.

Bolick, M.M. 2024 Machine Learning Applications in GIS. South Carolina Foothills ArcUsers Quarterly Meeting, Greenville, SC. February 2024.

Bolick, **M.M.** 2022. Machine learning to predict dissolved oxygen in Hunnicutt Creek. Clemson University Graduate Research Symposium, Darlington, SC. August 18, 2022.

Bolick, M. 2021. Create 3D Building Scenes. Clemson University, GIS Center Workshop. November 2021.

Bolick, M. 2021. GIS and Machine Learning. FOR 4340/6340, Clemson University. November 2021.

Bolick, M. 2019. ESRI Operations Dashboard Applications for Local Government Transparency. South Carolina Foothills Arc User Network quarterly meeting, Greenville SC. February 2019.

McMillan*, M. 2018. Threats to Big Cats in Southeast Asia. Nicholas School of the Environmental Master's Project Symposium, Durham, NC. April 6, 2018. *maiden name

Skills

Advanced experience in Geographic Information Systems (GIS) - ArcGIS, ArcMap, ArcPro, ArcGIS Online, Survey123, Field Maps, Collector, 3D Analyst, ArcPro Deep Learning Library, Global Positioning Systems (GPS), ENVI, Google Earth Engine, Remote Sensing, LiDAR

Machine learning, R and Python programming languages

FAA Part 107 Certified UAS Pilot

Water quality monitoring, bacteria plating, and wildlife surveys

Community engagement and education

Financial analytics, non-profit accounting, knowledge of Quickbooks Online