ELISABETH B. POWELL

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RESEARCH INTERESTS

My research interests are at the intersection of landscape ecology and data science in understanding how climate change and anthropogenic disturbance affect the coastal landscape. I am interested in how changes in ecosystem function are manifested in vegetation structure and how we can detect these changes using remote sensing. Currently, my dissertation research examines the impact of increased inundation from sea level rise on the structure and composition of coastal forests. This research integrates and leverages Lidar data's capability to map the upland forest's three-dimensional vertical structure to understand initial forest change along the marsh-upland ecotone that may be associated with marsh migration.

EDUCATION

Ph.D., Geographic Sciences — August 2019 - Present
University of Maryland, College Park, MD
Thesis Advisor: Dr. Ralph Dubayah
NOAA Margaret A. Davidson Graduate Research Fellow

M.S., Environmental Science — March 2018
Drexel University, Philadelphia, PA
Thesis Title: The effects of open marsh water management (OMWM) practices on the carbon balance of tidal marshes in Barnegat Bay, New Jersey

B.S., Environmental Science — May 2014
Widener University, Chester, PA

RELEVANT RESEARCH & WORK EXPERIENCE

Graduate research fellow, Margaret A. Davidson Graduate Research Fellowship, Delaware National Estuarine Research Reserve, NOAA — August 2020 – Present

- Led the terrestrial laser scanning fieldwork and subsequent data analysis of forest structure at the two reserves
- Assisted in preparing and delivering presentations on research findings to local government stakeholders, staff of the reserve, and the local community

Graduate research assistant, Global Ecosystem Dynamics Investigation (GEDI) LiDAR mission, University of Maryland — August 2019 – Spring 2021

- Contributed to the calibration and validation processes of GEDI L1B and L2A data products
- Assisted in the weekly evaluation of modifications to reference ground tracks that intersect designated calibration and validation sites as part of GEDI Science Operations (GSO) activities

Research Associate, Patrick Center for Environmental Research, The Academy of Natural Sciences of Drexel University — March 2016 – August 2019

- Assisted with the long-term monitoring of coastal wetland elevation and accretion patterns through remote sensing
- Lead field technician under the Delaware River Watershed Initiative (DRWI)
- Led event-based sampling campaign using ISCO automatic water samplers and pressure transducer loggers

Environmental Scientist, ATC Group Services LLC, Environmental Management Division — June 2014 – June 2016

- Prepared Phase I and Phase II environmental site assessments
- Prepared multiple Section 106 National Historic Preservation Act Reviews
- Assisted in stormwater permitting and compliance documentation (NOI, SWPPP, SPCC) for national clients

TEACHING EXPERIENCE & SERVICE

Graduate Teaching Assistant (TA), Geographic Sciences, University of Maryland — August 2021 – Present

- GEOG 172: Earth from Space
- GEOG 201: Geography of Environmental Systems
- GEOG 301: Advanced Geographical Environmental Systems

Diversity and Inclusion Committee Graduate Student Representative, Geographical Sciences Graduate Student Organization (GSO) — Fall 2020 – Spring 2022

- Attended and contributed to departmental meetings aimed at developing new policies and practices to increase the recruitment of minority students

PUBLICATIONS

Powell, E., K.A. St.Laurent, and R.O. Dubayah. 2022. Lidar-Imagery Fusion Reveals Rapid Coastal Forest Loss in Delaware Bay Consistent with Marsh Migration. *Remote Sensing*, 14(18), 4577.

Powell, E., J.R. Krause, R.M. Martin, and E.B. Watson. 2020. Pond excavation reduces coastal wetland carbon dioxide assimilation. Journal of Geophysical Research: *Biogeosciences*, 125(2).

Watson, E.B., K. Szura, **E. Powell**, N.P. Maher, and C. Wigand. 2018. Cultural eutrophication is reflected in stable isotopic composition of eastern mudsnail, *Nassarius obsoletus. Journal of Environmental Quality* 47: 177-184.

Watson, E.B., **E. Powell**, N.P. Maher, A.J. Oczkowski, B. Paudel, A. Starke, K. Szura, and C. Wigand. 2018. Indicators of nutrient pollution for Long Island, New York, estuarine environments. *Marine Environmental Research* 134: 109-120.

CONFERENCE PRESENTATIONS

Powell, E., K.A. St. Laurent, and R.O. Dubayah. 2022. Lidar-Imagery Fusion Reveals Rapid Coastal Forest Loss. American Geophysical Union Meeting, 12-15 December.

Powell, E., & K. St. Laurent. 2022. Mapping vegetation dynamics along the upland-marsh boundary to understand ecosystem responses to marsh migration. Ocean Sciences Meeting, 20-24 February, Online.

Powell, E., & K. St. Laurent. 2021. Mapping vegetation dynamics along the upland-marsh boundary to understand ecosystem responses to marsh migration. Coastal and Estuarine Federation, November 1-4, Online.

*Detailed list of conference presentations is available upon request