

Brittany L. Hoffnagle, M.S., B.S.

Environmental Scientist

EXPERTISE

Geospatial data collection and analysis, coastal environmental management, ecological risk assessment, climate change vulnerability assessment, long-term water quality monitoring, in-situ field data collection, tidal creek morphology and migration.

QUALIFICATION SUMMARY

- Experienced spatial data collector and spatial data analyst using ESRI's ArcGIS framework for coastal and marine projects.
- Geospatial data collection, reduction and analysis using RTK-GPS and ESRI ArcGIS.
- Coastal processes and their effects on shoreline morphology and tidal creek migration.
- Experience in field data collection of water, elevation, vegetation, birds, marine mammals and invertebrates.
- Conducting ecological risk assessments and climate change vulnerability assessments.
- Providing technical support for visual and verbal scientific communication to diverse audiences.
- Software expertise: ESRI ArcGIS; ETGeowizards; HYPACK; Fledermaus; MatLab; SigmaPlot; Onset HOBOWare, SPSS; Microsoft Office Suite; Adobe Photoshop and Illustrator; SLAMM: Sea Level Affecting Marshes Model.

WORK EXPERIENCE

2015-Present Environmental Scientist, Woods Hole Group, Inc.
2013-2014 NSF Graduate STEM Fellow, Horry County, SC Schools
2012-2015 Graduate Assistant, Coastal Carolina University
2010 Research Technician, Arizona Game and Fish Dept.
2009-2010 Research Technician, Whale Center of New England
2008-2009 Environmental Education Intern, Delaware Nature Society



Education

2015 – M.S.
Coastal Marine and Wetland
Studies
Coastal Carolina University
2008 – B.S.
Environmental Biology
Coastal Carolina University

Certificates of Training

- MA EOEEA Municipal
Vulnerability Preparedness
(MVP) Program Provider
- OSHA 40-Hour HAZWOPER
- NOAA Coastal Inundation
Mapping
- Edward Tufte: Presenting
Data and Information

Professional Affiliations

Northeast Arc Users Group
(Board Member)

Publications & Presentations

9

KEY PROJECTS

Palm Beach Flooding Vulnerability Assessment Town of Palm Beach, Environmental Scientist & GIS technician

Conducted detailed climate change vulnerability assessments for the Town of Palm Beach, Florida using a highly resolved sea level rise and extreme weather model. The Town vulnerability was then used to determine the Coastal Vulnerability Index for the purpose of understanding the potential SLR risk to various property assets (i.e. sewer pump stations, buildings, etc). The CVI results were utilized by the Town of Palm Beach to prioritize strategic adaptation and resiliency efforts.

Municipal Vulnerability Preparedness Program Town of Edgartown, MVP Lead Facilitator

Led the Edgartown Community Resilience Building workshop following guidelines for the MA EOEEA Municipal Vulnerability Preparedness (MVP) Program. Presented the Community Resilience Building framework and regionally downscaled climate change projections, and discussed potential hazards and risks. Guided stakeholders and workshop facilitators in assessing local vulnerability of infrastructure, environmental and societal assets, and developing and prioritizing actions to reduce vulnerability and increase resilience throughout the community. Led the preparation of the Summary of Findings report and assisted in organizing a public listening session for the Town of Edgartown.

Municipal Vulnerability Preparedness Program Town of Falmouth, Town of Sandwich, Town of Wareham, MVP Facilitator

Facilitated stakeholder engagement on climate change vulnerability and adaption for the Falmouth Community Resilience Building workshop following guidelines for the MA EOEEA Municipal Vulnerability Preparedness (MVP) Program. Guided stakeholders in assessing local vulnerability of infrastructure, environmental and societal assets, and developing and prioritizing actions to reduce vulnerability and increase resilience throughout the community.

Provincetown Municipal Airport Coastal Vulnerability Assessment Horsley Witten Group GIS technician

Completed the sea level rise and storm surge vulnerability assessments for present and potential future impacts to the Provincetown (MA Municipal Airport under two scenarios in the GIS platform. Two scenarios- closed and opened tidal gates- were mapped at the Hatches Harbor dike road.

Coastal Vulnerability Indexing, Mapping, Assessment and Adaptation of Trustees of Reservations Coastal Properties, Trustees of Reservations. Environmental Scientist

Conducted detailed climate change vulnerability assessments for numerous Trustees of Reservations coastal properties using a highly modified bathtub analysis approach and a highly resolved sea level rise and extreme weather model. The Trustees property vulnerability was then used to determine the Coastal Vulnerability Index for the purpose of understanding the potential SLR risk to various property assets (i.e. trails, infrastructure, buildings).The CVI results were utilized by the Trustees of Reservations to prioritize adaptation and resiliency efforts.

KEY PROJECTS (CONTINUED)

MassDOT-FHWA Pilot Project for Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options of the Central Artery, Massachusetts Department of Transportation. Environmental Scientist.

Utilized previously completed vulnerability assessment data to conduct a time-step GIS analysis of flood pathways and flooding residence times for Central Artery areas containing important infrastructure and tunnel networks. Flooding pathways and residence times were displayed in maps to support emergency response and adaptation planning for various time horizons- present day, 2030, and 2070.

Climate Change Resiliency Investigation and Feasibility Evaluation of Easton Pond, City of Newport, Rhode Island. Environmental Scientist.

Critically reviewed and assessed the technical merits of existing mapping platforms (i.e. FEMA Flood Insurance Maps, NOAAs SLR viewer, Climate Centrals Surging Seas, etc.) to provide the city of Easton information about their accuracy and limitations. Conducted a climate change and vulnerability assessment for Easton Pond for various planning horizons- present day, 2030, 2070. All findings of the review and the results of the vulnerability assessment were provided to Fuss & O'Neill to assist the City of Newport in future planning, maintenance, and adaptations of Easton pond and associated dams in response to climate change and sea level rise.

Climate Change and Extreme Weather Vulnerability Assessments for Massachusetts Communities, Kleinfelder. Environmental Scientist

Assisted in the preparation of vulnerability maps, based on results of a highly resolved sea level rise and extreme weather model, for a number of Massachusetts North Shore and South Shore communities. Identified appropriate building locations of several hospital campuses to understand the potential SLR risk. Vulnerability maps were then used to support emergency preparedness and adaptation scoping over various planning horizons – present day, 2030, and 2070.

Technical Support for Evaluation of Preliminary and Effective FEMA FIRMS for various Massachusetts Counties/Towns- Environmental Scientist

Utilized ESRI ArcGIS to visualize updated modeling results for predicted Special Flood Hazard Areas (SFHA's) and Base Flood Elevations (BFE's) along identified transects. Produced annotated and topographic maps to reflect flood zone changes.

Ecological Risk Assessment of Newtown Creek, NYCDEP. Environmental Scientist.

Provided technical support for the ecological risk assessment of Newtown Creek in support of the CERCLA process. Reviewed and synthesized benthic community data to understand temporal and spatial differences in species abundance, number of species, and dominant species index within the study site, as well as four regional reference areas. Evaluated the effects of Combined Sewage Outflows (CSO's) on these benthic community metrics. Utilized ArcMap to create figures and graphics representing results of the synthesis of data.

KEY PROJECTS (CONTINUED)

Ecological Risk Assessment of Boston Harbor Clam Flats, Massachusetts Port Authority. Environmental Scientist

Conducted an in-depth review of oil and oil-related contaminant documents for the Boston Harbor and connected tributaries using the Massachusetts Department of Environmental Protection online database. Identified all historical and present locations of known oil spills occurring within 2000 feet of the nearest water source. Prepared a map of all known locations to support an investigation of the links between oil contamination, neoplasia and a soft-shell clam mortality event.

Ecological Risk Assessment of a Wood Products Facility. HTE Northeast, Inc. Environmental Scientist

Completed a Stage II environmental risk characterization under the Massachusetts Contingency Plan for the exposure of biota to metals in sediments and prey items using various food chain models. Applied the PEC-Quotient model to assess probable sediment toxicity to sediment dwelling organisms. Used bioaccumulation models to estimate tissue concentrations in sediment dwelling organisms, and calculated the dose to higher trophic levels to determine the potential risk to wildlife populations.

PUBLICATIONS & PRESENTATIONS

Hoffnagle, B.L. 2015. Linking water quality and beach morphodynamics in a heavily impacted tidal creek in Myrtle Beach, South Carolina. Master's Thesis. Coastal Carolina University. Conway, South Carolina.

Hoffnagle, B.L., and A.E. Grogan. 2014. Enhancing a middle school curriculum with research and technology, the importance of integrating scientists in education. South Estuarine Research Society 40th Anniversary Meeting. Savanna, Georgia. Poster

Hoffnagle, B.L., E.E. Hackett, R.N. Peterson, M.P. Slattery, and R.F. Viso. 2014. Effect of morphological change on tidal range within a tidal creek. Southeastern Estuarine Research Society Semi-annual Meeting. Carolina Beach, North Carolina. Oral

Hoffnagle, B.H., J. Famely, T. Wickwire, T. O'Shea, and V. Antil. 2017. Using the ArcGIS Framework to Conduct Coastal Climate Change Vulnerability Assessments for Trustees of Reservations' Properties. Poster Presentation at the Northeast ARC User Group Spring Spatial Technologies Conference, Newport, RI, Nov 2017.

Hoffnagle, B.H., J. Famely, T. Wickwire, T. O'Shea, and V. Antil. 2017. Using the ArcGIS Framework to Conduct Coastal Climate Change Vulnerability Assessments for Trustees of Reservations' Properties. Oral Presentation at the Northeast ARC User Group Spring Spatial Technologies Conference, Amherst, MA, May 2017.

Hoffnagle, B, J Famely, T Wickwire, T O'Shea, V Antil. 2017. Poster Presentation: The Use of a Coastal Vulnerability Assessment to Prioritize Habitat Adaptation Strategies in Response to Future Climate Change. Cape Cod Natural History Conference, Barnstable, MA. March 11, 2017.

PUBLICATIONS AND PRESENTATIONS (CONTINUED)

Famely, J., K. Bosma and B. Hoffnagle. 2016. Sea Level Rise and Storm Surge Inundation Mapping—Great Marsh Communities (Essex County, MA). Prepared by Woods Hole Group for National Wildlife Federation and U.S. Geological Survey.

O’Shea, T, T Wickwire, B Hoffnagle, V Antil, R Hopping. 2016. PRESENTATION: Habitats, Roads, Cultural and Recreational Resources, Buildings and Bathrooms: In a Changing Climate, What Should We Protect? Coastal Vulnerability Indexing, Mapping, Assessment and Adaptation on The Trustees of Reservations Coastal Properties – Case Study. 4th Annual Cape Coastal Conference, “Taking Action for a Prosperous and Healthy Cape: Putting Science, History and Innovative Economic Strategies to Work”, Hyannis Resort and Conference Center, Hyannis, MA. December 6-7, 2016.

Orescanin, M.M., Hamilton, R.P., Hoffnagle, B.H., 2019. Tidal choking in an anthropologically modified salt marsh estuary: Improving circulation through constriction removal. Estuar. Coast Shelf Sci. 218, 148-162.

2013 National Science Foundation Graduate STEM Fellowship. Placement in 8th grade Horry County, South Carolina science classroom.