

# ANNA E. WINDLE

## PHD STUDENT OF MARINE, ESTUARINE, ENVIRONMENTAL SCIENCES

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## EDUCATION

**PhD in Marine Estuarine Environmental Sciences** 2018-Expected 2023  
University of Maryland Center for Environmental Science (UMCES)  
Horn Point Laboratory, Cambridge, MD

**Masters of Environmental Management** 2016-2018  
Duke University Nicholas School of the Environment (Durham, NC) & Duke University Marine Lab (Beaufort, NC)  
*Concentration:* Coastal Environmental Management  
*Master's Project:* The use of autonomous terrestrial rovers for high resolution light pollution sampling in beach environments

**Bachelor of Science.** Environmental Science, Departmental Honors 2012-2016  
Washington College, Chestertown, MD  
*Minors:* Biology and Anthropology  
*International Research:* Sustainability and Conservation Methods in Galapagos Islands, Ecuador (June 2014); Women's Health Care, Tanzania (May 2013)  
*Thesis:* The effects of sand characteristics on the clutch survival and hatching success of the loggerhead sea turtle (*Caretta caretta*)

## TRAINING

**International Operational Satellite Oceanography Training** June 2019  
*College Park, MD*  
Received training in NOAA CoastWatch Data Analysis Tools and Utilities, Copernicus Online Data Access, Sentinel Applications Platform (SNAP)

**Cornell Satellite Remote Sensing Training Program** June 2019  
*Cornell University, Ithaca, NY*  
2-week summer course on satellite remote sensing with a focus on ocean color

**Scientific Research and Education Network (SciREN) Lesson Plan Workshop** February 2018  
*Duke Marine Lab, Beaufort, NC*

Provided researchers an opportunity to write a lesson plan with the guidance of experienced science educators

**NOAA Tools Training**

**October 2017**

*NOAA Beaufort Lab, Beaufort, NC*

Gained experience with various NOAA tools, including Sea Level Rise Viewer, Coastal Flood Exposure Mapper, and NOAA's Digital Coast.

**Marine Planning Advancement Training**

**January 2017**

*Duke Marine Lab, Beaufort, NC*

Participated in an interactive game-theory based educational activity to identify, address, and manage coastal and marine spatial planning areas

**RESEARCH AND PROFESSIONAL EXPERIENCE**

**Graduate Research Assistant**

**2018-present**

*University of MD Center for Environmental Science, Cambridge, MD*

Assist in remote sensing research using satellites, drones, and ship-based hyperspectral radiometers. Working to improve remotely sensed water quality monitoring in Chesapeake Bay.

**Academic Tutor**

**2019**

*Chesapeake College Academic Support Center, Cambridge, MD*

Provide academic support for students attending Chesapeake College.

**Community Outreach Coordinator**

**2017-2018**

*Duke Marine Lab Community Science Initiative, Beaufort, NC*

Increased community engagement through scientific research of marine debris and water quality. Assisted in designing social media/websites, delivered outreach programs, worked with local teachers and classrooms, and developed lesson plans for community outreach.

**Graduate Research Assistant**

**2017-2018**

*Marine Robotics and Remote Sensing Lab, Beaufort, NC*

Supported UAS fieldwork and assisted in data processing of UAS imagery using Pix4D software. Contributed to monthly landscape classifications of the Cape Lookout National Seashore. Updated lab communications and social media.

**Graduate Research Assistant**

**2016-2017**

*Bernhardt Aquaterrestrial Biogeochemistry Lab, Durham, NC*

Processed water and soil samples from the field and configured data in preparation for various aquaterrestrial biogeochemistry analyses supporting a long-term project exploring the impacts of saltwater intrusion on coastal marshes.

**Campaign Intern**

*Environment North Carolina, Raleigh, NC*

2016

Organized and advocated for local environmental campaigns such as seismic testing, the effects of neonicotinoids on bee populations, and fracking in NC. Generated opinion media to communicate and engage the public and policymakers.

### Sea Turtle Intern

*Rookery Bay National Estuarine Research Reserve, Naples, FL*

2015

Surveyed, located, and verified nesting activity (false crawls and nests) of the *Caretta caretta* at 5 shore locations. Maintained database of GPS coordinates and nesting information (mean high water, vegetation, stage of development, depredation). Managed 30 Rookery Bay sea turtle volunteers.

### Teaching Assistant

2014-2015

*Washington College, Chestertown, MD*

Guided and educated students during fieldtrips and discussion classes; provided professor general course support.

## Publications

Bierlich, K.C., **Windle, A.E.**, Gianelli, R., Seymour, A., Ridge, J.T., Davis, J., Johnston, D.W. In Prep: Increasing tidal inundation during UAS surveys of a salt marsh yields greater error in NDVI.

**Windle, A. E.**, Poulin, S., Seymour, A., Johnston, D.W., Ridge, J.T. In Prep: Using spectral and structural characteristics from unoccupied aircraft systems (UAS) to estimate intertidal oyster reef density.

Ridge, J. T., Gray, P. C., **Windle, A. E.**, & Johnston, D. W. 2019. Deep learning for coastal resource conservation: automating detection of shellfish reefs. *Remote Sensing in Ecology and Conservation*.

**Windle, A. E.**, Poulin, S. K., Johnston, D. W., & Ridge, J. T. 2019. Rapid and Accurate Monitoring of Intertidal Oyster Reef Habitat Using Unoccupied Aircraft Systems and Structure from Motion. *Remote Sensing*, 11(20), 2394.

**Windle, A. E.**, Hooley, D. S., & Johnston, D. W. 2018. Robotic vehicles enable high-resolution light pollution sampling of sea turtle nesting beaches. *Frontiers in Marine Science*, 5, 493.

## Presentations

1. Atmospheric correction algorithms portray differences in optical properties of Chesapeake Bay waters. **Windle, A.**, Silsbe, G. 2020. Poster presented at Ocean Sciences Meeting, San Diego, CA.

2. High resolution measurements of nighttime ambient light conditions correlate with sea turtle nesting on developed and undeveloped beaches in North Carolina. **Windle, A.**, Hooley, D., Johnston, D. 2018. Nicholas School of the Environment, Duke University Master's Project presentation, Durham, NC.
3. Using Unmanned Aerial Systems (UAS) remote sensing imagery to assess oyster reef health. **Windle, A.**, Poulin, S., Ridge, J., Seymour, A., Johnston, D. 2018. Poster presented at 32nd Annual Tidewater Atlantic Fisheries Society Meeting, Beaufort and Morehead City, NC.
4. The use of autonomous terrestrial rovers for high resolution environmental sampling in beach environments. **Windle, A.**, Hooley, D., Newton, E., Johnston, D. 2018. Poster presented at the Southeast Regional Sea Turtle Meeting, Myrtle Beach, SC.
5. High resolution measurements of nighttime ambient light conditions correlate with sea turtle nesting on developed and undeveloped beaches in North Carolina. **Windle, A.**, Hooley, D., Newton, E., Johnston, D. 2018. Southeast Regional Sea Turtle Meeting, Myrtle Beach, SC.
6. The effects of sand characteristics on the clutch survival and hatching success of the loggerhead sea turtle (*Caretta caretta*). **Windle, A.E.** 2016. Poster presented at the Washington College Environmental Science & Studies Department Senior Capstone Presentation, Chestertown, MD.

## AWARDS & HONORS

### Funding

Ocean Carbon and Biogeochemistry Travel Grant	2019
Chesapeake Bay Trust Environmental Education Mini Grant (\$5,000)	2019
Horn Point Graduate Assistantship	2018
North Carolina Sea Grant/ Space Grant Research Fellowship (\$10,000)	2017
Edna Bailey Sussman Funding Award (\$6,300)	2017

### Scholarship

Ryan Saba Memorial Student Fellowship (\$2,000)	2019
Sea Turtle Inc. Scholarship- South Padre, TX (\$500)	2018
Departmental Honors in Environmental Science	2016
Blackwater National Wildlife Refuge Environmental Sciences Scholarship (\$3,000)	2015
Dean's List, Washington College	2012-2016

## SERVICE AND OUTREACH

### Activities

Tour Guide- Horn Point Lab, Cambridge, MD	2019
Board member of ShoreRivers, Easton, MD	2019
Co-chair of Society for Women in Marine Science HPL chapter, Cambridge, MD	2018-2019

Planning member of Girls Exploring Science & Technology (GEST) @ Duke Marine Lab	2018
President of Duke University Student Chapter of the Coastal Society	2017-2018
Admissions Fellow at Washington College Office of Admissions, Chestertown, MD	2013-2016
Horseshoe Crab Spawning Survey Volunteer, DE NERR, Dover, DE	2015-2016
Member, Student Environmental Alliance, Washington College	2014-2016
President of Washington College Dance Club	2014-2015

### Invited Talks

2018. Sea turtles dig the dark: The use of drones to monitor light pollution on NC beaches. North Carolina Museum of Natural Sciences, Raleigh, NC.

2018. Impacts of light pollution on nesting sea turtles in North Carolina. North Carolina Museum of Natural Sciences at Whiteville Coastal Teen Science Café, Whiteville, NC.

2017. Impacts of light pollution on nesting sea turtles in North Carolina. North Carolina State University Center for Marine Sciences and Technology Coastal Teen Science Café, Morehead City, NC.

### Association Memberships

American Geophysical Union (AGU)  
 Society for Women in Marine Science (SWMS)  
 The Coastal Society (TCS)

## SKILLS AND FIELD EXPERIENCE

**Certificate of Geospatial Analysis**, Nicholas School of the Environment, Duke University

**Computer:** Sentinel Application Platform (SNAP), NASA SeaDAS, Geospatial analysis and GIS software (ArcPro, ArcGIS.x), Pix4D, R, Python, MATLAB, Adobe Illustrator & Photoshop.

**Field:** Federal Aviation Administration Certified Remote Pilot; Gathering informatics using ArcPad, Trimble, and Emlid RTK GNSS Reach RS; Lifetime Certificate of Boating Education; YSI device for water quality testing

\*Last updated March 13, 2020