SHANNON RICCI

Interests: data analysis, data visualization, marine benthic ecology, conservation, passive acoustics, informal environmental science education

View this CV online with links at https://swricci.github.io/my-cv/

EDUCATION

current | 2018

PhD Candidate, Geospatial Analytics
North Carolina State University — Raleigh, NC

- Advancing the characterization and interpretation of marine soundscapes through development of automated data processing techniques and integration of satellite imagery
- Advisor: Dr. DelWayne Bohnenstiehl

2015 | 2013

M.S., Biological Oceanography
North Carolina State University — Raleigh, NC

- Thesis: Spatiotemporal soundscape patterns and processes in an estuarine reserve
- Advisor: Dr. David Eggleston

2012 | 2008

B.S., Marine Science, Marine Biology concentration
University of Maine — Orono, ME

- Thesis: Salinity tolerance of the oyster mudworm Polydora websteri

RESEARCH EXPERIENCE

current | 2021

Graduate Research Assistant
Data Science Academy — North Carolina State University

- Provide data sciecne analytics support to researchers and students at NC State
- Consult on aspects of programming, data manipulation/cleaning and analysis for a broad range of projects and across a variety of disciplines

current | 2018

PhD Dissertation Research
Geophysics & Acoustics Lab — North Carolina State University

- NC Space Grant/NC Sea Grant Graduate Research Fellow (2020-2021)
- Characterize and interprete marine soundscapes using automated acoustic data processing techniques
- Develop method to detect small boats in Planet satellite imagery

CONTACT

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LANGUAGE SKILLS

- MATLAB
- R
- Python
- ArcGIS Pro
- QGIS

*Made with the R package **pagedown**.*

The source code is available on github.com/nstrayer/cv.

Last updated on 2021-11-03.

2018 | 2016

Research Technician

Marine Ecology & Conservation Lab — North Carolina State University

- Processed, analyzed, synthesized, and published soundscape and other group research
- Assisted with the design and analysis of a variety of lab group research projects
- Mentored incoming students in soundscape data analysis techniques

2015 | 2013

MS Thesis Research

Marine Ecology & Conservation Lab — North Carolina State University

- North Carolina Sea Grant/NC Coastal Reserve Coastal Research Fellow
- Field: Designed and performed soundscape characterization of NC Coastal Reserve
- Lab: Designed and performed experiments investigating oyster settlement response to habitat associated sound

2015 | 2013

Graduate Research Assistant

Marine Ecology & Conservation Lab — North Carolina State University

- Assisted with lab and field experiments including: oyster restoration monitoring, fouling organism study, modeling larval dispersal of deep-sea larvae

2012 | 2009

Student Laboratory/Research Technician

University of Maine — Orono, ME

- Assisted with lab and field projects investigating how injury level in marine worms impacts food web dynamics in mudflats
- Conducted lab-based experiment to treat an infestation of marine worms in local aquacultured oysters
- Advisors: Dr. Sara Lindsay, Dr. Paul Rawson, Mick Devin

2011

NSF Research Experience for Undergraduates

University of Delaware — Lewes, DE

- Project: Spawning site characteristics of horsehoe crabs along two beaches in the DE Inland Bays
- Advisor: Dr. Doug Miller

SELECTED PUBLICATIONS

2021

Monitoring visitation at North Carolina artificial reef sites using high resolution satellite imagery

Ocean and Coastal Management in prep

- Authored with: DR Bohnenstiehl

2019

Fish community structure, habitat complexity, and soundscape characteristics of patch reefs in a tropical, back-reef system[1]

Marine Ecology Progress Series

- Lyon RP, Eggleston DB, Bohnenstiehl DR, Layman CA, Ricci SW, Allgeier JE

2018 **Investigating the utility of ecoacoustic metrics in marine soundscapes**[2]
Journal of Ecoacoustics
• Bohnenstiehl DR, Caretti O, Lyon RP, Ricci SW, Eggleston DB

2017 **Oyster toadfish Opsanus tau boatwhistle call detection and patterns within a large-scale oyster restoration site**[3]
PLOS ONE
• Authored with: Bohnenstiehl DR, Eggleston DB, Kellogg ML, Lyon RP

2017 **Use of underwater soundscapes to characterize nocturnal fish behavior and habitat use within a complex mosaic of estuarine habitats**[4]
Bulletin of Marine Science
• Authored with: Eggleston DB, Bohnenstiehl DR

2016 **Temporal soundscape patterns and processes in an estuarine reserve**[5]
Marine Ecology Progress Series
• Authored with: Eggleston DB, Bohnenstiehl DR, Lillis A

LINKS

1. https://doi.org/10.3354/meps12829
2. https://dx.doi.org/10.22261/JEA.R1156L
3. https://doi.org/10.1371/journal.pone.0182757
4. https://doi.org/10.5343/bms.2016.1037
5. https://doi.org/10.3354/meps11724

SELECTED PRESENTATIONS

2021 **Assessment of visitation trends at North Carolina artificial reefs using high-resolution satellite imagery**
Coastal & Estuarine Research Federation 26th Biennial Conference

2021 **Assessment of visitation trends at North Carolina artificial reefs using high-resolution satellite imagery**
North Carolina Space Symposium — virtual

2020 **Development of a call catalog to support automated acoustic data processing techniques for coral reef soundscapes**
Ocean Sciences Meeting — San Diego, CA

2017 **Application of a fish call detection tool to assess oyster reef restoration success**
Benthic Ecology Meeting — Myrtle Beach, SC

2016 — **Use of underwater soundscapes to characterize nocturnal fish behavior and habitat use within an estuarine reserve**
Benthic Ecology Meeting — Portland, ME

2015 — **Use of underwater soundscapes to characterize nocturnal fish behavior and habitat use within an estuarine reserve**
Int'l Symposium on Fish at Night — Miami, FL

2015 — **Spatiotemporal patterns in the soundscapes of a coastal marine reserve**
Benthic Ecology Meeting — Quebec City, Quebec, Canada

TEACHING EXPERIENCE

2019 — **Fundamentals of Geospatial Information Science and Technology**
North Carolina State University — Raleigh, NC

- Independent study position
- Updated graduate-level ArcMap course material (11 assignments) to use ArcGIS Pro.
- Tested assignments and midterms to ensure proper functionality in the new software.

2018 | 2014 — **SciREN**
Science Research and Education Network

- Developed standards-aligned lesson plans for teachers based on research

2016 — **Beyond Show and Tell Workshop**
North Carolina State University — Raleigh, NC

- Co-instructor (Dr. Holly Menninger)
- Taught communications skills to faculty and graduate students
- Assisted in development of research inspired hands-on activities for NC Science Festival Events

2015 | 2013 — **Introduction to Oceanography (Lab)**
North Carolina State University — Raleigh, NC

- Undergraduate level class
- Designed lesson plans on Ocean Acoustics and Marine Bioacoustics
- Revised lab lecture PowerPoints to improve student learning

2015 | 2014 — **Engaging the Public in Science**
North Carolina Museum of Natural Sciences — Raleigh, NC

- Program participant
- Learned to more effectively communicate scientific research to a variety of audiences through a series of classes and workshops

2013

Environmental Education Intern

Smithsonian Environmental Research Center — Edgewater, MD

- Led PreK - 8, scout groups, and public environmental education programs about estuaries and wetlands
- Created informational displays for the center highlighting SERC research and opportunities
- Maintained data collected by school groups for future use by students and teachers

2013 | 2012

Education Intern

Center for the Urban River — Yonkers, NY

- Assisted educators with programs (seining, marsh scavenger hunt, water clean-up, fish identification) for student and scout groups
- Formerly Beczak Environmental Education Center

COMMUNITY ENGAGEMENT

2017 | 2016

Triangle Science and Technology Expo, exhibitor

North Carolina Museum of Natural Sciences

2016

Sustainability Symposium, presenter

North Carolina State University

2015

Meet the Scientist, presenter

North Carolina Museum of Natural Sciences

2014

Sound in the Sea Day, presenter

Duke University Marine Lab

SELECTED PRESS (ABOUT)

2021

What can satellite imagery tell us about how many boats visit reefs?[6]

Hook, Line, & Science, NC Sea Grant

- Summary of my artificial reef visitation research and UCGIS presentation

2020

Remote Sensing and the Science of Sound[7]

Center for Geospatial Analytics News

- Article about my PhD dissertation research

2015

Music in the Marsh: Summer Soundscapes of the Rachel Carson Reserve[8]

Coastwatch, NC Sea Grant

- Popular science article about my master's thesis research characterizing underwater sound in an estuarine reserve

LINKS

- https://doi.org/10.3354/meps12829
- https://dx.doi.org/10.22261/JEA.R1156L
- https://doi.org/10.1371/journal.pone.0182757
- https://doi.org/10.5343/bms.2016.1037
- https://doi.org/10.3354/meps11724
- https://ncseagrant.ncsu.edu/hooklinescience/2021/08/16/what-can-satellite-imagery-tell-us-about-how-many-boats-visit-reefs/
- https://cnr.ncsu.edu/geospatial/news/2020/01/30/remote-sensing-and-the-science-of-sound/
- https://ncseagrant.ncsu.edu/coastwatch/previous-issues/2015-2/summer-2015/music-in-the-marsh-the-summer-soundscapes-of-the-rachel-carson-reserve/