

**Scott Howard Ensign, Ph.D.****Curriculum Vitae (23 Sep 2024)**

Vice President, Assistant Director, Research Scientist  
Stroud Water Research Center  
970 Spencer Road  
Avondale, PA 19311

**Professional Experience**

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2020-present Vice President, Assistant Director, Research Scientist, Stroud Water Research Center  
2018-2020 Assistant Director, Research Scientist, Stroud Water Research Center  
2013-2022 Adjunct Assistant Professor, Marine, Earth, and Atmospheric Science Department, NC State University  
2013-2018 Co-Founder, Planktos Instruments, LLC, Morehead City, NC  
2004-2017 Co-Founder/Managing Partner, Aquatic Analysis and Consulting, LLC, Wilmington, NC  
2010-2011 Research Ecologist, National Research Program, U.S. Geological Survey, Reston, VA  
2004-2005 Research Technician III, University of North Carolina at Chapel Hill, Institute of Marine Science, Morehead City, NC  
1997-2002 Research Technician II, Center for Marine Science, University of North Carolina at Wilmington, Wilmington, NC

**Education**

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2005-2010 Doctor of Philosophy - Ecology, University of North Carolina at Chapel Hill.  
Advisers: Michael Piehler and Martin Doyle  
2002-2004 Master of Science - Ecology, University of North Carolina at Chapel Hill. Adviser: Martin Doyle  
1992-1996 Bachelor of Arts - Environmental Science, Cum laude, University of North Carolina at Wilmington

**Teaching**

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2012, 2016 Guest Lecturer, Curriculum in the Ecology and Environment, Capstone Class, University of North Carolina at Chapel Hill, Institute of Marine Sciences  
2010 Guest Lecturer, Environmental Biology, Craven Community College, New Bern NC  
2002, 2006, 2010 Guest Lecturer, Human Impacts on Estuarine Ecosystems, University of North Carolina at Chapel Hill  
2002-2003 Lecturer/Teaching Assistant, Introduction to Physical Geography, University of North Carolina at Chapel Hill

**Graduate Student Committees**

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2017-2020 Adam Gold, PhD, Curriculum in Ecology, UNC Chapel Hill  
2015-2018 John Gardner, PhD, Nicholas School for the Environment, Duke University  
2014-2015 Lauren Handsel, MS, Department of Marine, Earth, and Atmospheric Sciences Department, NC State University  
2013-2014 Caitlin White, MS, Department of Marine Sciences, UNC Chapel Hill

## Patents

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**Ensign, SH, R Neve.** 2018. Devices for measuring parameters of water. US 10,006,897 B1.

## Fellowships and Awards

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2016 NC IDEA Seed Grant for Planktos Instruments, LLC  
2011-2012 Mendenhall Post-Doctoral Research Fellow, US Geological Survey, Reston VA  
2010 Dissertation Completion Fellow, University of North Carolina at Chapel Hill  
2010 Future Faculty Fellow, University of North Carolina at Chapel Hill  
2007-2010 STAR Graduate Fellow, US Environmental Protection Agency  
2007 Best Biogeoscience Paper, Ecological Society of America (Ensign and Doyle 2006: "Nutrient spiraling in streams and river networks")

## Professional Service

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2022-present **Mentor**, Headwaters Leadership Academy, Society for Freshwater Science  
2021 **Session Organizer**, "Connecting Continents and Coasts: Evolution of Tidal Freshwater River Systems", Coast and Estuarine Research Society Annual Meeting  
2019-2024 **Associate Editor**, *Limnology and Oceanography: Methods*  
2003-present **Reviewer** for *Biogeochemistry, Catena, Ecology, Ecosphere, Ecosystems, Ecological Applications, Environmental Science and Technology, Estuaries and Coasts, Estuarine Coast and Shelf Science, EGU Biogeosciences, Freshwater Biology, Freshwater Science, Fundamental and Applied Limnology, Global Biogeochemical Cycles, Geophysical Research Letters, Hydrobiologia, Hydrological Sciences, Hydrological Processes, Journal of Applied Geography, Journal of Environmental Management, Journal of Environmental Quality, Journal of Geophysical Research-Biogeosciences, Journal of Hydrology, Journal of the American Water Resources Association, Limnology and Oceanography, Limnology and Oceanography: Letters, Nature Geoscience, Nature Communications, Science of the Total Environment, Water Resources Research, Wetlands, Wetlands Ecology and Management*  
2005-present **Grant Reviewer** for North Carolina Sea Grant  
**Grant Reviewer** for the National Science Foundation, Division of Environmental Biology  
**Panel Reviewer** for the National Science Foundation, Directorate for Technology and Innovation Partnerships, Convergence Accelerator  
2017 **Member**, Albemarle Pamlico National Estuary Partnership, Water Resources and Assessment Team  
2013 **Member**, Albemarle Pamlico National Estuary Partnership, Science and Technical Advisory Committee  
2013 **Participant**, North Carolina Coastal Plain Rivers Ecological Flows Working Group  
2012 **Convener**, AGU Chapman Conference "Hydrogeomorphic Feedbacks and Sea Level Rise in Tidal Freshwater River Ecosystems", Reston VA  
2010 **Session Organizer**, "Hydrology, geomorphology, and ecology of tidal freshwater zones, or What Happens in rivers when water flows upstream?" American Society of Limnology and Oceanography/North American Benthological Society Meeting, Santa Fe NM

2006                    **Session Organizer**, "Ecology and biogeochemistry of tidal freshwater ecosystems", Southeastern Estuarine Research Society Meeting, Savannah GA

### **Public Funding as Principal or Co-Principal Investigator**

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2021-2025            National Science Foundation, Division of Environmental Biology. A macrosystems perspective on river eutrophication from chlorophyll hysteresis patterns

2019-2023            Pennsylvania Department of Environmental Protection. Consortium for Scientific Assistance to Watersheds

2021-2024            National Science Foundation, Geosciences Directorate. Resolving sediment connectivity between rivers and estuaries by tracking particles with their microbial genetic signature

2016-2017            North Carolina Sea Grant. Going with the Flow: New Approaches for Determining Drivers of Toxic Cyanobacteria Blooms in the Cape Fear River, NC

2012-2017            US Department of Defense/Research Triangle Institute. Defense Coastal/Estuarine Research Program

2011-2012            Mendenhall Research Program, National Research Program, US Geological Survey. Sediment and nutrient trapping in tidal freshwater rivers: Implications of sea level rise on coastal morphology and biogeochemistry

2008-2009            North Carolina Sea Grant Fisheries Resource Grant. Zooplankton assessment project: Reassessing prey availability for river herring in the Chowan River Basin

2007-2010            US Environmental Protection Agency, STAR Graduate Fellowship. Ecology and Biogeochemistry of Tidal Freshwater Rivers

2005                    North Carolina Water Resources Research Institute. Effects of tidal flow on riparian zone hydraulics and nitrogen dynamics: implication for nutrient management in coastal creeks

### **Peer Reviewed Research Publications**

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\*indicates student author or co-author

Oviedo-Vargas, D, M Peipoch, SH **Ensign**, D Bressler, D Arscott, J Jackson. 2024. Advancing freshwater science with sensor data collected by community scientists. *Frontiers in Ecology and the Environment* in press

**Ensign**, SH, JN Halls, EK Peck. 2023. Watershed sediment cannot offset sea level rise in most US tidal wetlands. *Science* 382: 1191-1195.

Gardner, JR, MW Doyle, SH **Ensign**, D Kahler. 2023. A new metric for sunlight exposure in rivers, lakes, and oceans. *Limnology & Oceanography Letters* 9(2): 128-134.

Peipoch, M. SH **Ensign**. 2022 Deciphering the origin of riverine phytoplankton using in situ chlorophyll sensors. *Limnology and Oceanography Letters* 7(2): 159-166.

Christensen NL, PA Cunningham, K Matthews, IC Anderson, MJ Brush, S Cohen, CA Currin, SH **Ensign**, NS Hall, PN Halpin, ML Kirwan, JR McNinch, HW Paerl, MF Piehler, AB Rodriguez, CR Tobias, JR Walters. 2021. Ecosystem-based management for military training, biodiversity, carbon storage and climate resiliency on a complex coastal land/water-scape. *Journal of Environmental Management* 280, doi: 10.1016/j.jenvman.2020.111755.

Gardner\* JR, SH **Ensign**, JN Houser, MW Doyle. 2019. Light exposure along particle flowpaths in large rivers. *Limnology and Oceanography*, doi: 10.1002/lno.11256.

- Krauss KW, GB Noe, JA Duberstein, WH Conner, CL Stagg, N Cormier, MC Jones, CE Bernhardt, BG Lockaby, AS From, TW Doyle, RH Day, SH **Ensign**, KN Pierfelice, CR Hupp, AT Chow, JL Whitbeck. 2018. The role of the upper tidal estuary in wetland blue carbon storage and flux. *Global Biogeochemical Cycles*, 10.1029/2018GB005897.
- Ensign** SH, G Noe. 2018. Tidal extension and sea level rise: Recommendations for a research agenda to guide ecosystem management. *Frontiers in Ecology and the Environment* 16(1):37-43.
- Croswell, J, I Anderson, JW Stanhope, B Van Dam\*, MJ Brush, SH **Ensign**, MF Piehler, B McKee, M Bost, and HW Paerl. 2017. Carbon budget of a shallow, lagoonal estuary: Transformations and source-sink dynamics along the river-estuary-ocean continuum. *Limnology and Oceanography* 62(S1):S29-S45.
- Ensign** SH, J Gardner\*, MW Doyle. 2017. New strategies for measuring rates of environmental processes in rivers, lakes, and estuaries. *Freshwater Science* 36(3):453-465.
- Ensign** SH, C Currin. 2017. Geomorphic implications of particle movement by water surface tension in a salt marsh. *Wetlands* 37(2):245-256.
- Ensign** SH, C Currin, M Piehler, C Tobias. 2016. A method for using shoreline morphology to predict suspended sediment concentration in tidal creeks. *Geomorphology* 276:280-288.
- Julian, JP, CJP Podolak, KM Meitzen, MW Doyle, RB Manners, ET Hester, SH **Ensign**, NA Wilgruber. 2016. Shaping the physical template: Biological, hydrological, and geomorphic connections in stream channels, in: *Stream Ecosystems in a Changing Environment* (Jones, JB, and Stanley, EH, eds). Elsevier, pp. 85-134.
- Leech DM, SH **Ensign**, M Piehler. 2016. Spatio-temporal patterns in the export of dissolved organic carbon and chromophoric dissolved organic matter from a coastal, blackwater river. *Aquatic Sciences* 78(4):823-836.
- Ensign** SH, GB Noe, CR Hupp, KJ Skalak. 2015. Head-of-tide bottleneck of particulate material transport from watersheds to estuaries. *Geophysical Research Letters* 42(24): 10,671-10,679.
- Ensign** SH, CR Hupp, GB Noe, KW Krauss, CL Stagg. 2014. Sediment accretion in tidal freshwater forests and oligohaline marshes of the Waccamaw and Savannah Rivers, U.S.A., *Estuaries and Coasts*, 37:1107-1119.
- Ensign** SH, DM Leech, MF Piehler. 2014. Effects of nutrients and zooplankton on an estuary's phytoplankton: Inferences from a synthesis of 30 years of data. *Ecosphere* 5(7), article 89.
- Von Korff BH\*, MF Piehler, SH **Ensign**. 2014. Comparison of denitrification between rivers channels and their adjoining tidal freshwater wetlands. *Wetlands* 34(6):1047-1060.
- Ensign** SH, GB Noe, CR Hupp. 2013. Linking channel hydrology with riparian wetland accretion in tidal rivers. *Journal of Geophysical Research-Earth Surface* 119(1):28-44.
- Ensign**, SH, MW Doyle, MF Piehler. 2013. The effect of tide on the hydrology and morphology of a freshwater river. *Earth Surface Processes and Landforms* 38(6):655-660.
- Ensign** SH, K Siporin\*, MF Piehler, MW Doyle, L Leonard. 2012. Hydrologic and biogeochemical controls of denitrification in tidal freshwater wetlands. *Estuaries and Coasts* 36(3):519-532.
- Ensign** SH, MW Doyle, MF, Piehler. 2012. Tidal geomorphology affects phytoplankton at the transition from forested streams to tidal rivers. *Freshwater Biology* 57(10):2141-2155.
- Doyle MW, SH **Ensign**. 2009. Views of a River: Alternative reference frames in river system science. *BioScience* 59(6):499-510.
- Mallin, MA, VL Johnson, SH **Ensign**. 2009. Comparative impacts of stormwater runoff on water quality of an urban, a suburban, and a rural stream. *Environmental Monitoring and Assessment* 159(1-4):475-491.
- Ensign** SH, MF Piehler, MW Doyle. 2008. Riparian zone denitrification affects nitrogen flux through a tidal freshwater river. *Biogeochemistry* 91(2-3):133-150.

- Ensign** SH, HW Paerl. 2006. Development of an unattended estuarine nutrient monitoring program using ferries as data-collection platforms. *Limnology and Oceanography: Methods* 4(10): 399-405.
- Ensign** SH, MW Doyle. 2006. Nutrient spiraling in streams and river networks. *Journal of Geophysical Research – Biogeosciences* 111(G4):G04009.
- Mallin MA, J Johnson, SH **Ensign**, T. MacPherson. 2006. Factors contributing to hypoxia in rivers, lakes, and streams. *Limnology and Oceanography* 51(1):690-701.
- Ensign** SH, S McMillan, M Piehler, S Thompson. 2006. Nitrogen and phosphorus attenuation within the stream network of a coastal, agricultural watershed. *Journal of Environmental Quality* 35(4):1237-1247.
- Ensign** SH, MW Doyle. 2005. In-channel transient storage and associated nutrient retention: evidence from experimental manipulations. *Limnology and Oceanography*, 50(6):1740-1751.
- Ensign** SH, JN Halls, MA Mallin. 2004. Application of digital bathymetry data in an analysis of flushing times of two large estuaries. *Computers and Geosciences* 30(5):501-511.
- Cahoon, LB, SH **Ensign**. 2004. Response to commentary by Hardy, Reich, and Tucker. *Nutrient Cycling in Agroecosystems* 70:323-324.
- Cahoon LB, SH **Ensign**. 2004. Excessive soil phosphorus levels in eastern North Carolina: temporal and spatial distributions and relationships to agriculture and other land uses. *Nutrient Cycling in Agroecosystems* 69:111-125.
- Mallin MA, MR McIver, SH **Ensign**, LB Cahoon. 2004. Photosynthetic and heterotrophic impacts of nutrient loading to blackwater streams. *Ecological Applications* 14(3):823-838.
- Mallin MA, MH Posey, MR McIver, DC Parsons, SH **Ensign**, TD Alphin. 2002. Impacts and recovery from multiple hurricanes in a Piedmont-Coastal Plain river system. *BioScience* 52(11):999-1010.
- Mallin MA, SH **Ensign**, TL Wheeler, DB Mayes. 2002. Pollutant removal efficacy of three wet detention ponds. *Journal of Environmental Quality* 31:654-660.
- Ensign** SH, MA Mallin. 2001. Stream water quality following timber harvest in a Coastal Plain swamp forest. *Water Research* 35:3381-3390.
- Mallin MA, LB Cahoon, DC Parsons, SH **Ensign**. 2001. Effect of nitrogen and phosphorus loading on plankton in coastal plain blackwater streams. *Journal of Freshwater Ecology* 16:455-466.
- Mallin MA, SH **Ensign**, MR McIver, GC Shank, PK Fowler. 2001. Demographic, landscape, and meteorological factors controlling the microbial pollution of coastal waters. *Hydrobiologia* 460:185-193.
- Mallin MA, MH Posey, GC Shank, MR McIver, SH **Ensign**, TD Alphin. 1999. Hurricane effects on water quality and benthos in the Cape Fear watershed: Natural and anthropogenic impacts. *Ecological Applications* 9:350-362.

### **Published News, Opinion, and Invited Commentary**

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- Ensign** SH, D Arscott, M Daniels, C Dow, J Jackson, D Oviedo-Vargas, M Peipoch. 2024. To achieve the Clean Water Act's Goals, Prioritize upstream Ecology. American Water Resources Association *Impact* magazine
- Ensign** SH, D Arscott, S Hicks, A Aufdenkampe, T Muenz, J Jackson, D Bressler. 2019. A digital mayfly swarm is emerging. *Eos*.
- Ensign**, SH. 2023. Monitor My Watershed helps lower barriers for real-time data sharing. Consortium of Universities for the Advancement of Hydrologic Sciences HydroInformatics Blog.
- Ensign**, SH. 2022. How a nascent IoW gave rise to the state-of-the-science in sensor data sharing. Internet of Water Coalition Blog: Water Features.

- Ensign, SH.** 2022 Open data and open hardware: Tools for collaborative solutions to water challenges. *Journal of Open Hardware*.
- Ensign SH, G Noe, CR Hupp, S Fagherazzi.** 2012. A meeting of the waters: Interdisciplinary challenges and opportunities in tidal rivers. *Eos* 93(45):455-456.

### **Invited Departmental Seminars**

- 2023 University of Delaware, Department of Biological Sciences, Wilmington, DE
- 2022 University of Pennsylvania, Department of Earth & Environmental Science, Pennsylvania, PA,
- 2017 Stroud Water Research Center, Avondale, PA
- 2017 National Oceanic and Atmospheric Administration, National Centers for Coastal Ocean Science, Beaufort, NC
- 2016 University of North Carolina at Chapel Hill, Department of Marine Sciences, Chapel Hill, NC
- 2016 University of North Carolina at Wilmington, Department of Geography and Geology, Wilmington, NC
- 2015 University of Texas at Austin, Marine Sciences Institute, Port Aransas, TX
- 2015 Virginia Institute of Marine Science, Gloucester Point, VA
- 2015 East Carolina University, Department of Biology, Greenville, NC
- 2014 University of North Carolina at Chapel Hill, Department of Marine Sciences/Institute for Ecology and the Environment, Chapel Hill, NC
- 2013 Virginia Commonwealth University, Department of Biology, Richmond, VA
- 2013 North Carolina State University, Department of Marine, Earth, and Atmospheric Science, Raleigh, NC
- 2013 University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge, MD
- 2012 National Research Program, US Geological Survey, Reston VA
- 2012 University of North Carolina at Wilmington, Department of Geography and Geology, Wilmington NC
- 2012 North Carolina State University, Department of Marine, Earth, and Atmospheric Sciences, Raleigh NC
- 2011 University of Delaware, Department of Geology, Newark DE
- 2011 Cary Institute of Ecosystem Studies, Millbrook NY
- 2011 National Research Program, US Geological Survey, Reston VA
- 2011 Australian Rivers Institute, Griffith University, Brisbane, Australia
- 2010 University of North Carolina at Chapel Hill, Institute of Marine Sciences, Morehead City NC
- 2010 University of North Carolina at Wilmington, Department of Geography and Geology, Wilmington NC

### **Published Data Products**

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- Ensign, SH and J Kan. 2024. Water monitoring of the Choptank River and Pocomoke River, Maryland, USA ver1. Environmental Data Initiative.  
<https://doi.org/10.6073/pasta/54fecf9652c2e4d93e92d64388e6c3eb>

Ensign S. 2024. Ecological use attainment by state waters in the US, HydroShare, <https://www.hydroshare.org/resource/69ba717c227849b28b424030fee66679/>

Ensign, S. 2023. EnviroDIY in the Delaware River Basin, HydroShare, <https://doi.org/10.4211/hs.2f1db430089d47b09277a6b3b29ef7b1>

Ensign, S, J Halls, E Peck. 2023. Regional Deficiencies in River Sediment Supporting Tidal Wetlands in the US, HydroShare, <https://doi.org/10.4211/hs.fa0611211f9e461daf0576966ac62412>

Ensign, S. 2022. EnviroDIY versus USGS Monitoring Data Comparison, HydroShare, <https://doi.org/10.4211/hs.973b130a79bb4473bd0ae57850333fec>

Ensign, S. 2021. Precipitation Recurrence Intervals for Model My Watershed's Site Storm Model, HydroShare, <https://doi.org/10.4211/hs.8c9fc8107ffa46c7a27354b284a16464>

Ensign, S. 2020. Modeling Future Climate for Model My Watershed, HydroShare, <https://doi.org/10.4211/hs.60058ceda8334e68be141516c5b8de3f>

### Media Coverage

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| 2016 | “Morehead City Startup's River Drifting Device Makes Water Quality Easy to Measure”, ExitEvent |
| 2016 | “HydroSphere Drifter Brings Lagrangian Sampling to Freshwater”, Environmental Monitor Magazine |
| 2009 | "Species on the Brink: Latest Challenges for River Herring Research", Coastwatch Magazine      |

### Presentations and Exhibitions to Professional Organizations and Meetings

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- Ensign, S, J Hall, E Peck.** 2024. A nationwide geospatial model of river sediment accretion on tidal wetlands informs management and monitoring of sea level rise impacts. Society for Freshwater Science Annual Meeting, Philadelphia, PA.
- Peipoch, M, M Daniels, S Ensign.** 2024. Growth, loss, and benthic recruitment of phytoplankton in a mid-order river. Society for Freshwater Science Annual Meeting, Philadelphia, PA.
- Peipoch, M, M Daniels, D Oviedo-Vargas, S Ensign.** 2023. Exploring sources and transport of river algae using in-situ chlorophyll sensors at regional and continental scales. 13th National Monitoring Conference. Virginia Beach, VA.
- Peipoch, M, M Daniels, S Ensign.** 2023. Continental-scale patterns in origin and transport of river plankton. Annual Meeting of Society Freshwater Sciences. Brisbane, Australia
- Ensign, SH.** 2022. Build your own water monitoring tools. Upper Shore Youth Environmental Summit, Washington College, MD.
- Ensign, SH, S Hicks, R Johnson, S Damiano, D Bressler, H Brooks, T Muenz, D Arscott, A Aufdenkampe.** 2020. EnviroDIY: a community for do-it-yourself environmental monitoring using IoT devices and FAIR data services. National Water Quality Monitoring Conference (virtual).
- Korol, A, G Noe, SH Ensign.** 2019. Tidal extension: will sea-level rise change ecosystem functions of tidal freshwater wetlands on the whole? Coast and Estuarine Research Federation, Mobile, AL.

- Noe, GB, SH **Ensign**, CR Hupp, KW Krauss, N Bourg. 2018. The importance of watershed sediment supply to tidal wetland resilience to sea level rise. Marsh Resilience Summit, Williamsburg, VA.
- Noe GB, SH **Ensign**, CR Hupp, KW Krauss, AR Korol, J Gillespie, N Bourg. 2018. Changes in sediment availability along upper estuaries create a sediment shadow: consequences for tidal freshwater wetland dynamics. Society for Wetland Science, Denver, CO.
- Currin, CA, I Anderson, KM Czapla, JL Davis, SH Ensign, ER Herbert, ML Kirwan, ND McTigue. 2017. The shape we're in: Geomorphology and hydrodynamics influence rates of salt marsh carbon burial. Coast and Estuarine Research Federation, Providence, RI.
- Ensign** SH. 2017. Planktos Instruments. National Environmental Monitoring Conference, Washington, DC.
- Noe, G, SH **Ensign**, C Hupp, KW Krauss, J Gillespie, N Bourg. 2017. The sediment shadow in tidal freshwater rivers: implications for estuaries. Coast and Estuarine Research Federation, Providence, RI.
- Ensign** SH. 2017. Planktos Instruments. Benthic Ecology Annual Meeting, Myrtle Beach, SC.
- Ensign** SH. 2017. Planktos Instruments. Society for Freshwater Science Annual Meeting, Raleigh, NC.
- Hall NS, A Schnetzer, SH **Ensign**, D Wiltsie, H Paerl. 2017. "Unraveling dual influences of increasing nutrients and changing flow regimes on bloom potentials along the middle Cape Fear River. North Carolina Water Resources Research Institute Annual Conference, Raleigh, NC.
- Gardner J, SH **Ensign**, J Houser, M Doyle. 2017. Underwater light regimes in rivers from multiple measurement approaches. American Geophysical Union, New Orleans, LA.
- Ensign** SH. 2017. EnviroTech Summit, NC State University, Raleigh, NC.
- Noe GB, et al. 2017. "Nutrient and sediment inputs and release, soil structure, and biogeochemistry in floodplains: a comparison of natural and restored/created wetlands. Society of Wetland Scientists Annual Meeting, San Juan, Puerto Rico.
- Ensign** SH, GB Noe, CR Hupp. 2016 "Freshwater wetland landscapes and salinity intrusion", Association for the Sciences of Limnology and Oceanography Summer Meeting, Santa Fe, NM.
- Ensign** SH, C Currin. 2015 "Surface tension moves salt marsh sediment- you don't need Einstein's equations to build a marsh", Coastal and Estuarine Research Federation Biennial Conference, Portland, OR.
- Ensign** SH, J Gardner, M Doyle, R Neve. 2015 "Lagrangian river drifters reveal dissolved oxygen sinks in a large river", International Society for River Science, La Crosse, WI.
- Gardner J, **Ensign** SH, M Doyle, R Neve. 2015 "Eularian versus Lagrangian perspectives on light in a large river", Society for Freshwater Sciences, Milwaukee, WI.
- Ensign** SH, C Currin. 2014. "Floating material is an alternative sediment source for salt marshes: Novel measurement methods and comparison with suspended sediment". South Atlantic Estuarine Research Society Meeting, Carolina Beach, NC.
- Ensign** SH. 2014. "Planktos Instruments: Future Technologies for Water Competition". Water and Health Conference 2014, UNC Chapel Hill Friday Center, Chapel Hill, NC.
- Ensign** SH. 2013. "Implications of discharge frequency and magnitude on water, carbon, and nitrogen flux through tidal freshwater rivers". Albemarle-Pamlico National Estuary Program Scientific and Technical Advisory Committee, Greenville, NC.
- Ensign** SH, G Noe, C Hupp. 2012. "Wetland sediment accretion and river channel hydrology along a salinity and tidal gradient from the non-tidal through oligohaline zone of two tidal rivers. AGU Chapman Conference: Hydrogeomorphic Feedbacks and Sea Level Rise in Tidal Freshwater River Ecosystems, Reston, VA.



- Ensign** SH, D Leech, M Piehler. 2012. "Habitat quality for river herring in the tidal freshwater Chowan River". Albemarle-Pamlico National Estuary Program Scientific and Technical Advisory Committee, Greenville, NC.
- Noe G, SH **Ensign**, C Hupp. 2011. "Tidal freshwater riverine wetlands: a unique system in the river-ocean continuum. International Estuarine Biogeochemistry Symposium, Atlantic Beach, NC.
- Siporin K, SH **Ensign**, M Piehler, M Doyle, L Leonard. 2011. "Landscape-scale controls of denitrification in tidal freshwater wetlands". International Estuarine Biogeochemistry Symposium, Atlantic Beach, NC.
- Leech DM, SH **Ensign**, MF Piehler. 2010. "A missing link: Zooplankton community dynamics in the absence of river herring in a coastal, blackwater river, North Carolina, USA". American Society of Limnology and Oceanography/North American Benthological Society Joint Meeting, Santa Fe, NM.
- Ensign** SH, MF Piehler, MW Doyle. 2010. "The influence of channel geomorphology on riparian shading and primary production in tidal freshwater rivers of the southeastern United States". American Society of Limnology and Oceanography/North American Benthological Society Joint Meeting, Santa Fe, NM.
- Ensign** SH, MF Piehler, MW Doyle. 2010. "Into the light: How geomorphology affects irradiance and primary production in tidal rivers". Benthic Ecology Meeting, Wilmington, NC.
- Mallin MA, VL Johnson, SH **Ensign**. 2010. "Landscape impacts on water quality in three oligohaline tidal creeks". Benthic Ecology Meeting, Wilmington, NC.
- Ensign** SH, M Doyle, M Piehler. 2009. "The evolution of tidal freshwater river geomorphology: Observations of short-term processes and speculation about long-term feedbacks". Coastal and Estuarine Research Federation Meeting, Portland, OR.
- Mallin M, M McIver, SH **Ensign**. 2009. "Comparative hypoxia drivers and impacts in adjacent riverine and lagoonal estuaries in North Carolina". Coastal and Estuarine Research Federation Meeting, Portland, OR.
- Ensign** SH. 2009. "Tidal freshwater rivers: The hydrologic nexus linking nutrient and fishery management". EPA STAR Graduate Fellowship Conference, Washington, DC.
- Piehler M, A Smyth, S **Ensign**. 2009. "Habitat specific rates of denitrification within the estuarine continuum". Society of Wetland Scientists Annual Meeting, Madison, WI.
- Ensign** SH, M Piehler, DM Leech. 2009. "Caught in the crossfire: Phytoplankton response to nutrient management and anadromous fish restoration". Ecological Society of America Annual Meeting, Albuquerque, NM.
- Doyle MW, SH **Ensign**. 2009. "Alternative reference frames in river system science". North American Benthological Society Annual Meeting, Grand Rapids, MI.
- Mallin MA, MR McIver, SH **Ensign**, J Lin. 2009. "Water column hypoxia in adjacent riverine and lagoonal estuaries in North Carolina". Meeting of the Southeastern Estuarine Research Society, Conway, SC
- Ensign** SH, MF Piehler, MW Doyle. 2008. "The ebb and flood of tidal freshwater rivers affect watershed denitrification: A missing link in river basin nitrogen budgets". Ecological Society of America Annual Meeting, Milwaukee, WI.
- Ensign** SH, MF Piehler, MW Doyle. 2007. "Nitrogen cycling in the riparian zone of a tidal freshwater river". North American Benthological Society Annual Meeting, Columbia, SC.
- Ensign** SH, MF Piehler, MW Doyle. 2007. "Celestial controls on nitrogen cycling in a tidal freshwater river". Southeastern Estuarine Research Society Meeting, Atlantic Beach, NC.

- Blum J, SH **Ensign**, S Slingsby, L Cahoon. 2007. "El Nino – Southern Oscillation effects on river discharge in the southeast United States: Coupling with the coastal ocean". Southeastern Estuarine Research Society Meeting, Atlantic Beach, NC.
- Ensign** SH, MF Piehler. 2006. "Transformations of carbon within the tidal freshwater zone of estuaries". Southeastern Estuarine Research Society Meeting, Savannah, GA.
- Piehler MF, SH **Ensign**, S Thompson. 2006. "Phytoplankton-nutrient relationships in the tidal freshwater zone of the Newport River, North Carolina". Southeastern Estuarine Research Society Meeting, Savannah, GA.
- Smyth A, D Velinsky, S **Ensign**, M Piehler, M Vile. 2006. "Two marshes, one problem: the effects of sea level rise on tidal freshwater marshes". Southeastern Estuarine Research Society Meeting, Savannah, GA.
- Ensign** SH, MW Doyle. 2006. "Nutrient spiraling through stream networks: a quantitative synthesis of 25 years of nutrient biogeochemical research". North American Benthological Society Annual Meeting, Anchorage, AK.
- Ensign** SH, MF Piehler, KG Fisher, MW Doyle. 2006. "Linking forested wetlands to estuaries: Nutrient dynamics and aquatic-terrestrial linkages in tidal freshwater streams of the Croatan National Forest drainage system". International Conference on Hydrology and Management of Forested Wetlands, New Bern, NC.
- Ensign** SH, MF Piehler, MW Doyle. 2006. "Effect of tidal hydrology on denitrification in a coastal freshwater stream". North Carolina Water Resources Research Institute Annual Conference, Raleigh, NC.
- Ensign** SH, HW Paerl. 2006. "Development of an unattended water quality monitoring system (FerryMon) for the Neuse River Estuary". North Carolina Water Resources Research Institute Annual Conference, Raleigh, NC.
- Ensign** SH, MW Doyle. 2004. "Quantifying controls on transient storage and nutrient retention using channel manipulations". American Society of Limnology and Oceanography, Savannah, GA.
- Mallin MA, VL Johnson, TA MacPherson, SH **Ensign**. 2004. "Biochemical oxygen demand variability in rural and urban southeastern streams". American Society of Limnology and Oceanography, Savannah, GA.
- Mallin MA, MR McIver, SH **Ensign**, JM Burkholder, PA Rublee. 2002. "Eutrophication and the distribution of *Pfiesteria* in urbanized tidal creeks." Tenth International Conference on Harmful Algae, St. Petersburg, Fla.
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