Nathan S. Hall
Research Assistant Professor
University of North Carolina Institute of Marine Sciences
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Education:

University of North Carolina at Chapel Hill, Chapel Hill, North Carolina
Ph.D., May 2009. Marine Sciences. Dissertation title: "Effects of the vertical structure of the water column on the phytoplankton in a shallow, lagoonal estuary". Advisor Hans W. Paerl

Duke University, Durham, North Carolina
B.S. Biology, Cum Laude, May 1998

Appointments:

2019- Present: Research Assistant Professor, UNC Chapel Hill, Institute of Marine Sciences, Morehead City, NC.

2014- 2018: Research Associate, UNC Chapel Hill, Institute of Marine Sciences, Morehead City, NC.

2016- Present: Adjunct Assistant Professor, NC State University, Raleigh, NC.

2009-2014: Postdoctoral Researcher, UNC Chapel Hill, Institute of Marine Sciences, Morehead City, NC.

2000-2009: Graduate Research Assistant. UNC Chapel Hill, Institute of Marine Sciences, Morehead City, North Carolina.

1998-2000: Research technician, UNC Institute of Marine Sciences, Morehead City, North Carolina.

1998- Present: Site operator for the US EPA Clean Air Status and Trends Network (site BFT142, Beaufort, NC) and National Atmospheric Deposition Program (site NC06, Beaufort, NC).

Peer-reviewed Publications:

Patrick, CJ, J Kominoski, WH McDowell, B Branoff, D Lagaomasino, M Leon, M Hensel, E Hensel, B Strickland, A Armitage, MC Cerqueira Jr, V Congdon, TA Crowl, S Douglas, B Erisman, R Feagin, S Geist, **NS Hall**, JA Hogan, JD Hogan, MC Lara, K Lu, C Madden, MT Martinez, P Montagna, CS O'Connell, S Pennings, E Proffitt, BK Reese, JW Reustle, K Robinson, S Rush, R Santos, M Shaw, R Smith, G Starr, B Stauffer, L Walker, M Wetz, E Whitman, S Wilson, J Xue, I Zink, X Zou. *In review*. A universal pattern of trade-offs between ecosystem resistance and resilience to tropical cyclones. *Science Advances*.

Hounshell, A.G., SR Fegley, **NS Hall**, CL Osburn, HW Paerl. 2021. Riverine discharge controls fluorescent organic matter dynamics over spatial and temporal scales in the Neuse River Estuary, North Carolina. *Estuaries and Coasts*. DOI: 10.1007/s12237-021-00955-w.

Han, Y., TN Aziz, D. Del Giudice, **NS Hall**, DR Obenour. 2021. Exploring nutrient and light limitation of algal production in a shallow turbid reservoir. *Environmental Pollution* 269: Article 116210. DOI: 10.1016/j.envpol.2020.116210.

Katin, A, D Del Giudice, **NS Hall**, HW Paerl, DR Obenour. 2021. Simulating algal dynamics within a Bayesian framework to evaluate controls on estuary productivity. *Ecological Modeling* 447: Article 109497. DOI: 10.1016/j.ecolmodel.2021.109497.

Christensen, N, P Cunningham, K Matthews, I Anderson, M Brush, S Cohen, C Currin, S Ensign, **N Hall**, P Halpin, M Kirwan, J McNinch, H Paerl, M Piehler, A Rodriguez, C Tobias, J Walters. *In press*. Ecosystem-based management for military training, biodiversity, and carbon storage on a complex coastal land/water-scape. *Journal of Environmental Management* 280. Article: 111755. DOI: 10.1016/j.jenvman.2020.111755.

Xu, H, M McCarthy, H Paerl, J. Brookes, G. Zhu, **N Hall**, B. Qin, Y Zhang, M Zhu, H Hampel, S Newell, W Gardner. 2021. The roles of external loading and internal nutrient cycling in supporting harmful cyanobacterial blooms in Lake Taihu, China. *Limnology and Oceanography* 66: 1492-1509.

Gong, W, **N Hall**, H Paerl, A Marchetti. 2020. Phytoplankton composition in a eutrophied estuary: Comparison of multiple taxonomic approaches and influence of environmental factors. *Environmental Microbiology* 22: 4718-4731. DOI: 10.1111/1462-2920.15221.

Montgomery, MT, TJ Boyd, **NS Hall**, HW Paerl, CL Osburn. 2020. Ecosystem capacity for microbial biodegradation of energetics and phenanthrene in three coastal waterways in North Carolina, USA. *ACS Omega*.5: 7326-7341.

Hogan, JA, AF Russell, G Starr, M Ross4, T Lin, C O'Connell, B A. Stauffer, KL. Robinson, M Chapela, LJ Xue, B Kiel Reese, SJ. Geist, ER. Whitman, S Douglas, VM. Congdon, JW. Reustle, RS. Smith, D Lagomasino, BA. Strickland, SS. Wilson, CE Proffitt, J. Derek, BA Hogan, BL. Branoff, AR. Armitage, SA. Rush, RO Santos, M Campos-Cerqueira, PA. Montagna, B Erisman, L Walker, WL. Silver, TA. Crowl, M Wetz, **N Hall,** X Zou, SC. Pennings, L Wang, C Chang, M Leon, WH. McDowell, JS Kominoski, CJ Patrick. 2020. A research framework to investigate ecosystem responses to tropical cyclones. *Bioscience* doi/10.1093/biosci/biaa034/5824888

Paerl, HW, NS Hall, AG Hounshell, KL Rossignol, MA Barnard, RA Luettich Jr., JC Rudolph, CL Osburn, J Bales, LW Harding Jr. 2020. Recent increases of rainfall and flooding from tropical cyclones (TCs) in North Carolina (USA): implications for organic matter and nutrient cycling in coastal watersheds. *Biogeochemistry* 150: 197-216.

Paerl, HW, **NS Hall**, AG Hounshell, RA Luettich, Jr., CL Osburn. 2019. Recent increase in catastrophic tropical cyclone flooding in coastal North Carolina, USA: Long-term observations suggest a regime shift. *Nature Scientific Reports* 9: Article number: 10620 (2019)

Hall NS, Werkhoven KV. 2019. Phytoplankton (Algae) Blooms. Enviro WIKI. United States Department of Defense. Strategic Environmental Research and Development Program/ Environmental Security Technology Certification Program.

Hounshell, AG, JC Rudolph, BR Van Dam, **NS Hall**, CL Osburn, HW Paerl. 2019. Extreme weather events modulate processing and export of dissolved organic carbon in the Neuse River Estuary, NC. *Estuarine Coastal and Shelf Science* 219**:** 189-200.

Hounshell, AG, JC Rudolph, BR Van Dam, **NS Hall**, CL Osburn, HW Paerl. 2019. Corrigendum: Extreme weather events modulate processing and export of dissolved organic carbon in the Neuse River Estuary, NC. *Estuarine Coastal and Shelf Sciences* 227: 106328.

Paerl, HW, KE Havens, H Xu, GW Zhu, MJ McCarthy, SE Newell, JT Scott, **NS Hall**, TG Otten, B Qin. 2019. Mitigating eutrophication and toxic cyanobacteria blooms in large lakes: The evolution of a dual nutrient (N and P) reduction paradigm. *Hydrobiologia.* 10.1007/s10750-019-04087-y.

Paerl, HW, KE Havens, **NS Hall**, TG Otten, M Zhu, G Zhu, B Qin. 2019. Mitigating a global expansion of toxic cyanobacterial blooms: The confounding impacts and challenges posed by climate change. *Freshwater and Marine Research* https://doi.org/10.1071/MF18392

Paerl, HW, JR Crosswell, B Van Dam, NS Hall, KL Rossignol, CL Osburn, AG Hounsell, RS Sloup, and LW Harding Jr. 2018. Two decades of tropical cyclone impacts on North Carolina's estuarine carbon, nutrient, and phytoplankton dynamics: implications for biogeochemical cycling and water quality in a stormier world. *Biogeochemistry* 141: 307-332.

Hall, NS, RW Litaker, WJ Kenworthy, MW Vandersea, WG Sunda, JP Reid, DH Slone, S Butler. 2018. Consortial brown-tide-picocyanobacteria blooms in Guantánamo Bay, Cuba. *Harmful Algae* 73: 30-43.

Gong, WD, J Brown, **N Hall**, D Schruth, H Paerl, A Marchetti. 2017. Molecular insights into a dinoflagellate bloom. ISME Journal 11:439-452.

Xu, H, HW Paerl, G Zhu, B Qin, **NS Hall**, and M Zhu. 2017 Long-term nutrient trends and harmful cyanobacterial bloom potential in hypertrophic Lake Taihu, China *Freshwater Biology* 787: 229-242.

Ma, Jianrong, Q Boqiang, HW Paerl, JD Brookes, **NS Hall**, K Shi, Y Zhou, J Guo, Z Li, H Xu, T Wu, and S Long. 2016. The persistence of cyanobacterial (Microcystis spp.) blooms throughout winter in Lake Taihu, China. *Limnology and Oceanography* 61: 711-722.

Hall NS, AC Whipple, and HW Paerl. 2015. Vertical spatio-temporal patterns of phytoplankton due to migration behaviors in two shallow, microtidal estuaries: Influence on phytoplankton function and structure. *Estuarine Coastal and Shelf Science* 162: 7-21.

Xu, H, HW Paerl, B Qin, G Zhu, **NS Hall**, and Y Wu. 2015. Determining critical nutrient thresholds needed to control harmful cyanobacterial blooms in eutrophic Lake Taihu, China. *Environmental Science & Technology* 49: 1051-1059.

Paerl, HW, H Xu, **NS Hall**, KL Rossignol, AR Joyner, GW Zhu, and BQ Qin. 2015. Nutrient limitation dynamics examined on a multi-annual scale in Lake Taihu, China: implications for controlling eutrophication and harmful algal blooms. *Journal of Freshwater Biology* 30: 5-24.

Paerl, HW, H Xu, **NS Hall, G** Zhu, B Qin, Y Wu, KL Rossignol, L Dong, MJ McCarthy, AR Joyner. 2014. Controlling cyanobacterial blooms in hypertrophic Lake Taihu,

China: Will nitrogen reductions cause replacement of non-N2 fixing by N2 fixing taxa? Submitted to *PlosOne* 9(11) DOI: 10.1371/journal.pone.

Paerl, HW, **NS Hall**, BL Peierls, KL Rossignol. 2014. The H.T. Odum Synthesis Essay. Evolving paradigms and challenges in estuarine and coastal eutrophication dynamics in a culturally and climatically stressed world. Estuaries and Coasts. DOI 10.1007/S12237-014-9773-X.

Paerl, HW, **NS Hall**, BL Peierls, KL Rossignol, AR Joyner. 2014. Hydrologic variability and its control of phytoplankton community structure and function in two shallow, coastal, lagoonal ecosystems: The Neuse and New River Estuaries, North Carolina, USA. Estuaries and Coasts. 37: 31-45. DOI 10.1007/S12237-013-9686-0.

Hall, NS, HW Paerl, BL Peierls, AC Whipple and KL Rossignol. 2013. Effects of climatic variability on phytoplankton biomass and community structure in the eutrophic, microtidal, New River Estuary, North Carolina, USA. *Estuarine and Coastal Shelf Science* 117: 70-82.

Peierls, BL, **NS Hall**, and HW Paerl. 2012. Non-monotonic responses of phytoplankton biomass accumulation to hydrologic variability: A comparison of two coastal plain North Carolina estuaries. *Estuaries and Coasts* 35:1376–1392.

Hall, NS and HW Paerl. 2011. Vertical migration patterns of phytoflagellates in relation to light and nutrient availability in a shallow, microtidal estuary. (Feature Article). *Marine Ecology Progress Series.* 425:1-19.

Paerl, HW, **NS Hall**, ES Calandrino. 2011. Controlling harmful cyanobacterial blooms in a world experiencing anthropogenic and climatic-induced change. Science of the Total Environment. 409:1739-1745.

Piehler, MF, CA Currin, and **NS Hall**. 2010. Effects of nitrogen enrichment on the structure and function of tidal sandflat microphytobethic communities. *Journal of Experimental Marine Biology and Ecology*. 390:99-105.

Paerl, HW, JD Bales, BL Peierls, **NS Hall**, MS Wetz, AR Joyner, SR Riggs, and RR Christian. 2010. Human and climatic impacts on the USA's largest lagoonal ecosystem, Pamlico Sound: Formulating science and management in the face of climate change. *In* Kennish, M and H Paerl. (eds.), Coastal Lagoons: Critical Habitats of Environmental Change. CRC Press, Boca Raton, Florida.

Paerl, HW, KL Rossignol, **NS Hall**, AR Joyner, BL Peierls, and JS Ramus. 2009. FerryMon: Ferry-based monitoring and assessment of human and climatically driven environmental change in the Albemarle-Pamlico Sound system. *Environmental Science and Technology*. *Environmental Science and Technology* 43:7609-7613.

Paerl, HW, KL Rossignol, **NS Hall**, BL Peierls, and MS Wetz. 2009. Phytoplankton community indicators of short-and long term ecological change in the anthropogenically and climatically impacted Neuse River Estuary, North Carolina, USA. *Estuaries and Coasts* 33:485-497.

Hall, NS, RW Litaker, E Fensin, JE Adolf, HA Bowers, AR Place, HW Paerl. 2008. Environmental factors contributing to the development and demise of a toxic dinoflagellate (*Karlodinium veneficum*) bloom in a shallow, eutrophic, lagoonal estuary. *Estuaries and Coasts* 31:402-418.

Piehler, MF, LJ Twomey, **NS Hall**, HW Paerl. 2004. The relationship of dissolved inorganic nutrient concentration on phytoplankton community structure and function in Pamlico Sound, NC, USA. *Estuarine Coastal and Shelf Science*. 61:197-209.

Fear, J, T Gallo, **N Hall**, J Loftin, H Paerl. 2004. Predicting benthic microalgal, oxygen and nutrient flux reponses to a nutrient reduction management strategy for the eutrophic Neuse River Estuary, North Carolina, USA. *Estuarine Coastal and Shelf Science.* 61: 497-506.

Piehler, MF, V. Winkleman, LJ Twomey, **NS Hall**, CA Currin and HW Paerl. 2003. Impacts of diesel fuel exposure on the microphytobenthos of an intertidal sandflat. *Journal of Experimental Marine Biology and Ecology*. 297:219-237.

Moisander, PH, TF Steppe, **NS Hall**, J Kuparinen, HW Paerl. 2003. Variability in nitrogen and phosphorous limitation for Baltic Sea phytoplankton during nitrogen fixing cyanobacterial blooms. *Marine Ecology Progress Series*. 262:81-95.

Research Awards:

Determining nutrient controls on phytoplankton production and harmful algal blooms in Albemarle Sound. North Carolina Commercial Fishing Fund. $205,000. FY 2021-2022.

Principal investigator. Understanding thermal stratification to prevent harmful algal blooms on the Cape Fear River. US Army Corps of Engineers. $242,379. FY 2022-2026.

Principal investigator. Water quality barriers to oyster recovery and restoration: Impacts of raphidophyte harmful algal bloom species on oyster recruitment in the New River Estuary. NC Sea Grant. $59,370. FY 2020-2022.

Co-Principal Investigator with Principal Investigator Hans Paerl UNC Institute of Marine Sciences. Defining the nitrogen budget for Falls Lake. North Carolina Policy Collaboratory. FY 2022. $50,000.

Principal investigator. Automation of Water Resources Inventory and Assessments (WRIA) and Contaminant Assessment Program (CAP) reporting for US National Wildlife Refuges. US Fish and Wildlife Service. FY 2020-2021. $20,000

Co-Principal investigator with Principal investigator Hans Paerl NC Institute of Marine Sciences. 2020. Public dissemination of monitoring results from the Neuse River Estuary Modeling and Monitoring Program. $5000. Upper Neuse River Basin Association.

Principal investigator. Understanding thermal stratification as a key driver of harmful cyanobacteria blooms on the Cape Fear River, NC. Urban Waters Consortium. FY 2020. $12,407.

Principal investigator. Quantitative evaluation of changing nutrient sources to the Chowan River. Clean Water Management Trust Fund subcontract through the Albemarle Commission. FY 2020. $18,140

Principal investigator. Using citizen science to understand nutrient limitation of algal blooms on the Chowan River: Filling critical data gaps and promoting community engagement. NC Sea Grant and Kenan Foundation Community Collaborative Research Grant. FY 2019. $15,515.

Principal investigator. Falls Lake nutrient study. North Carolina Policy Collaboratory. FY 2019-2021. $30,000.

Co-Principal Investigator with Principal Investigator Hans Paerl UNC Institute of Marine Sciences. Jordan Lake nutrient study. North Carolina Policy Collaboratorium. FY 2019. $52,000.

Principal investigator. How, where, when, and why: defining eutrophication related trends in water quality within the lower and middle Cape Fear River basin. North Carolina Water Resources Research Institute. FY 2017-2018. Extended 2019 $109,774.

Principal investigator. Going with the flow: New approaches for determining drivers of toxic cyanobacteria blooms in the Cape Fear River, NC. North Carolina Sea Grant. FY 2017-2018. $146,000

Co-Principal Investigator with Principal Investigator Hans W. Paerl, UNC Institute of Marine Sciences. Continuation request for ModMon: Neuse River Estuary monitoring for evaluating and verifying water quality conditions, models, and criteria. National Fish and Wildlife Foundation. FY 2016-2019. $480,000

Co-Principal Investigator with Principal Investigator Hans W. Paerl, UNC Institute of Marine Sciences. Developing a Comprehensive Assessment of the TMDL for the Neuse River Estuary, NC Using Advanced Unattended Water Quality Monitoring. N.C. Dept. of Environmental and Natural Resources. Section 319 Non-point source pollution control grant. FY 2006-2009. $412,140.

Service Awards:

Outstanding Reviewer of the Year, Coastal and Estuarine Research Federation, 2013

Teaching Experience:

2019-2021. Co Instructor, UNC Chapel Hill, Morehead City Field Site Capstone Course (ENEC698)

Present-2009: Guest lecturer, UNC Chapel Hill. Biological Oceanography (MASC 104), Estuarine and Coastal Marine Sciences (MASC 470), Human Impacts on Estuarine Processes (ENST 471) fall and spring semesters.

2012: Instructor, Craven County Community College. Environmental Biology (BIO140) and Environmental Biology Laboratory (BIO140A)

2011: Co-instructor, UNC Chapel Hill. Special Topics in Marine Sciences (MASC 490).

2008: Instructor. North Carolina Center for the Advancement of Teaching 5 day seminar, “Sand, Sound, and Sea: Coastal Ecology of the Outer Banks”.

2000-1999: Teaching assistant. UNC Chapel Hill. Introduction to Oceanography.

1998: Teaching assistant. Duke University. Introduction to Oceanography.

Undergraduate Independent Research Mentorship:

Diana Rypkema (2010)**,** Chris Berner (2011), Michael Clear (2011-2012), Brett Fickes (2013), Josh Edwards (2013), Jarrat Edwards (2015), Sarah Hudak (2017), Felix Evans (Fall 2018, summer 2019), Lanna Jin (2019)

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Senior Honors Thesis Advisees:
Elizabeth Farquar- senior honors thesis (2019-2020)
Luke Townsend- senior honors thesis (2020-2021)
Prisca Lim- senior honors thesis (2021-2022)

Graduate Advisory Committees:
Haley Plaas. Ph.D. (2019-). UNC Chapel Hill. Gillings School of Public Health. Environmental Sciences and Engineering.
Hunter Synan, M.Sc. (2019-2021). UNC Wilmington. Dept. of Earth and Ocean Sciences
Alexandria Hounshell. Ph.D. (2018-2019). UNC Chapel Hill. Dept. of Marine Sciences.
Linghan Dong. Ph.D.. (2014-2018). UNC Chapel Hill. Dept. of Marine Sciences.
Dan Wiltsie. M.Sc. (2016-2018). NC State University. Dept. of Marine Earth and Atmospheric Sciences.

Professional Association Memberships:
Association for the Sciences of Limnology and Oceanography (ASLO)
Society for Freshwater Sciences
NC Water Resources Association

Technical Reports:
Hall, N. Evaluation of water clarity metrics for protection of submerged aquatic vegetation in the Albemarle-Pamlico Estuarine System. Prepared for the Albemarle Pamlico National Estuary Partnership. August 2021.
Hall, N and H Paerl, 2020. Quantitative Evaluation of Changing Nutrient Sources to the Albemarle Sound System. Report prepared for the Albemarle Commission under Clean Water Management Trust Fund Planning Grant 2017-801. 34 p.
Bowen J, C Bell, M Lebo, **N Hall**, M O'Driscoll, L Petter, A Schnetzer, M Ardon, H Paerl, L Ehrlich, W Hall, D Osmond. 2020. North Carolina Nutrient Criteria Development Plan. Science Advisory Council. Chlorophyll-a Criteria for High Rock Lake. Raleigh, NC.
Spiegler, S, R Bandy, R., C Currin, J Dorton, R Ellin, P Farnell, J Fear, E Gilchrist, D Glenn, **N Hall**, W Jenkins, T Miller, B Puckett, J Ridge, K Shein. 2017. Report on the North Carolina Sentinel Site Cooperative 2017 Partners Meeting: February 21, 2017. NOAA Technical Memorandum-2017-239.
Paerl, H, M Piehler, I Anderson, S Ensign, R Luettich, **N Hall**, J Stanhope M McIver, B Peierls, B Van Dam. DCERP2 Annual Report III SERDP Project Number: RC-2245. Chapter 3. Aquatic/Estuarine Module Aquatic/Estuarine Monitoring Program. October 2017. Chapter 6. Aquatic/Estuarine Module Aquatic/Estuarine Main Channel Monitoring Program SERDP Project Number: RC-224 Aquatic/ Estuarine Module AEM-1
Paerl, H, M Piehler, I Anderson, S Ensign, R Luettich, **N Hall**, J Stanhope M McIver, B Peierls, B Van Dam. DCERP2 Annual Report III SERDP Project Number: RC-2245. Chapter 3. Aquatic/Estuarine Module Aquatic/Estuarine Monitoring Program. October 2016.
Baumgardner, R.E. Jr., CM Rogers, MR Puchalski, TF Lavery, KP Mishoe, GL Price, **NS Hall. 2014**. Measurements of atmospheric NH_3, NO_y/NO_x, and NO_2 and deposition of

total nitrogen at the Beaufort, NC CASTNET Site (BFT142). EPA/600/R-14/182 | August 2014 | www.epa.gov/research.

Paerl HW, **NS Hall**, BL Peierls, KL Rossignol, AR Joyner, T Otten, KH Reckhow, F Nojavan. 2013. Develop and Deploy Microalgal Indicators as Measures of Water Quality, Harmful Algal Bloom Dynamics, and Ecosystem Condition. Chapter 3 of the Final Research Report for the Defense Coastal and Estuarine Research Program. Aquatic/ Estuarine Module 3. SERDP Project Number: RC-1413.

Paerl HW, R Luettich, **NS Hall**, B Peierls, A Whipple. J Reynolds-Fleming. 2013. New River Estuary- Water Column. Chapter 5 of the Final Monitoring Report for the Defense Coastal and Estuarine Research Program. Aquatic/ Estuarine Module 3. SERDP Project Number: 2013. RC-1413.

Paerl HW, **NS Hall**. 2010. Developing a comprehensive assessment of the TMDL for the Neuse River Estuary, NC, using advanced unattended water quality monitoring. 2010. North Carolina Division of Water Quality, North Carolina Department of Environment and Natural Resources. Contract #: EW07025

Professional Service and Synergistic Activities:

North Carolina Marine Fisheries Commission, Habitat and Water Quality Advisory Committee (2019-Present)

White Lake Scientific Advisory Committee (2021)

Workshop Organizer and Co-Instructor with Dr. Robert Hirsch, USGS Emeritus Hydrologist. A flexible, state of the art approach to trend analyses for river water quality and nutrient loads to estuaries. (1-2 Nov. 2018)

Scientific Advisory Council, NC Dept. of Environmental Quality. North Carolina Nutrient Criteria Development Plan (2015-present)

Core Management Team, NOAA North Carolina Sentinel Site Cooperative (2017-present). Graduate Fellow Committee (2019). Research Symposium Committee (2019)

Cape Fear River Partnership Water Quality Team member (2017-present)

Co-chair with Dan Obenour (NCSU) Special Session 20. Understanding physical controls on cyanobacteria dominance: toward prediction and prevention. Society for Freshwater Sciences Annual Meeting. Raleigh, NC. May 2017.

Associate member of SCOR Working Group (WG 137): Global Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time Series Observations. 2010-2015

Reviewer for: *Marine Ecology Progress Series*, *Environmental Science & Technology*, *Limnology and Oceanography, The ISME Journal, Fundamental Applied Limnology*, *Estuaries and Coasts*, *Estuarine Coastal and Shelf Sciences, Continental Shelf Research, Frontiers in Marine Science, Hydrobiologia*, *Water Research*, , *Journal of Plankton Research, Cahiers de Biologie Marine*, *Marine and Freshwater Research*, *Journal of Earth System Science*, *Harmful Algae*, *Tropical Ecology*, *International Journal of Aquaculture*, *Marine Biology Research*, *Microorganisms, Journal of Coastal Research, Ecological Engineering, Chinese Journal of Oceanology and Limnology, Journal of Marine Systems, Chemosphere, Marine Environmental Research*

Proposal reviewer for: NOAA PCM HAB panelist, National Science Foundation, NC Water Resources Research Institute, NC Sea Grant, Agence Nationale de la Recherche (NSF equivalent of France), North Pacific Research Board, Hudson River Foundation, Deutsche Forschungsgemeinschaft (German Research Foundation), Maryland Sea Grant

Invited Seminars:

2019- Multifaceted impacts of flow as the master variable for bloom dynamics in rivers. UNC Chapel Hill Marine Sciences Department Spring Seminar Series. 6 March 2019

2014- Expansion of brown tide algal blooms: A threat to NC coastal waters? UNC Chapel Hill, Marine Sciences Department Spring Seminar Series. Chapel Hill, NC.

2014- Expansion of brown tide algal blooms: Are they a threat to NC coastal waters? Cape Hatteras National Seashore, Know Your Park Seminar Series. Ocracoke and Buxton, NC. 26-27

2013- River flow modulated effects of nutrient inputs and the phytoplankton response in two river dominated estuaries. Nanjing Institute of Geography and Limnology. Nanjing, China. August 2013.

2013- FerryMon, Keeping an eye on the health of Pamlico Sound, Come what may? NOAA's North Carolina Sentinel Site Cooperative. Beaufort, NC

2012- Time to grow: Insights into the relationship between nutrient inputs and the phytoplankton response in two river-dominated estuaries. UNC-Chapel Hill Institute for the Environment. Fall Seminar Series. Morehead City, NC

2012- Hydrologic control of phytoplankton dynamics: a comparison of two coastal plain North Carolina estuaries. Urban Waters Consortium. Greenville, NC.

2011- FerryMon: Highlights from a decade of intensive ferry-based monitoring of the Pamlico Sound system. Albemarle Pamlico National Estuarine Program. New Bern, NC

2009- The vertical world of phytoplankton in a shallow, lagoonal estuary. UNC-Chapel Hill Institute of Marine Sciences. Spring Seminar Series. Morehead City, NC

2005- Water quality monitoring in the Neuse River Estuary: Toward a successful TMDL management strategy. EPA Non-point source work group. New Bern, NC

2002-Application of an automated vertical profiling system equipped with an *in vivo* fluorescence probe to document diel vertical migration of phytoplankton in the Neuse River Estuary. National Atmospheric and Oceanographic Administration, Beaufort, NC

Selected Abstracts (*first author only***):**

Assessing global vs local drivers of estuarine pH using long term records from the USA's two largest estuaries. NS Hall, JM Testa, M Li, HW Paerl. Oral presentation at the Association for the Sciences of Limnology and Oceanography 2021 Aquatic Sciences Meeting. June 2021.

Multifaceted effects of changing flow regimes and hydrologic modifications on cyanobacterial bloom potentials along the Cape Fear River, NC. N Hall, S Ensign, H Paerl, A Schnetzer, D Wiltsie. Oral presentation at the 9th Annual US Symposium on Harmful Algae, November 2017. Baltimore, MD

Unraveling the multifaceted effects of changing flow regimes on cyanobacterial bloom potentials on the Cape Fear River, NC. N Hall, H Paerl, A Schnetzer, D Wiltsie, S Ensign. Oral presentation at the Society for Freshwater Sciences Bi-Annual Conference, June 2017. Raleigh, NC

Leveraging cutting-edge techniques to determine drivers of water quality in the Cape Fear River. N Hall, H Paerl, A Schnetzer, D Wiltsie, S Ensign. Poster presentation at the NC Water Resources Research Institute Annual Conference, March 2016. Raleigh, NC

Effects of vertical mixing on phytoplankton community composition in a shallow, lagoonal estuary. NS Hall, AC Whipple, RA Luettich, HW Paerl. Oral presentation at the bi-annual Coastal and Estuarine Research Federation conference. Nov. 2009. Portland, OR.

Development of a toxic dinoflagellate (*Karlodinium veneficum*) bloom in a shallow, eutrophic, lagoonal estuary. NS Hall, WR Litaker, PA Tester, EL Fensin, JE Adolf, AL Place, HW Paerl. Oral presentation at the bi-annual Estuarine Research Federation conference. Nov. 2007. Providence, RI.

Phytoplankton community structure as an indicator of ecosystem health. Oral presentation at the Atlantic Coast Environmental Indicators Consortium, Raleigh, NC. Apr. 2005.

Wavelet analysis of phytoplankton community depth indices in the Neuse River Estuary: Diurnal vertical migration as a major component of phytoplankton community depth variability. Oral presentation at the North Carolina Water Resources Research Institute annual conference, April 2005.

Additional Skills: Frequentist statistics, time series analysis, numerical modeling, Matlab and R proficiency, conversational Spanish, polite Chinese, microscopic phytoplankton identification and enumeration, boat and trailer handling, engine repair, SCUBA certified with AAUS scientific diver training.