

Curriculum Vitae

Michael F. Piehler

The University of North Carolina at Chapel Hill
Institute of Marine Sciences
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EDUCATION

Ph.D. in Environmental Sciences and Engineering. The University of North Carolina at Chapel Hill

M.S.P.H. in Environmental Sciences and Engineering. The University of North Carolina at Chapel Hill

B.S. in Biology. The University of North Carolina at Chapel Hill

POSITIONS HELD

July 2016- **Professor**, The University of North Carolina at Chapel Hill
Institute of Marine Sciences, Department of Marine Sciences,
Department of Environmental Sciences and Engineering and the
Curriculum for the Environment and Ecology

July 2018- **Director**, UNC Institute for the Environment

July 2017-June 2018 **Interim Executive Director**, UNC Coastal Studies Institute

April 2004- June 2018 **Program Head**, Estuarine Ecology and Human Health, UNC
Coastal Studies Institute

January 2012- June 2018 **Director of Graduate Studies and Admissions**, Curriculum for
the Environment and Ecology

July 2011- June 2016 **Associate Professor**, The University of North Carolina at Chapel
Hill Institute of Marine Sciences

July 2005-June 2011 **Assistant Professor**, The University of North Carolina at Chapel
Hill Institute of Marine Sciences

December 1998-June 2005: **Research Assistant Professor**, UNC-CH Institute of Marine
Sciences

PEER-REVIEWED PUBLICATIONS

(85 total published, h-index 30, i10-index 54 [Google Scholar])

*Authors in **bold** are students and post-docs mentored by Piehler*

Gold, AC, SP Thompson and MF Piehler. Nitrogen cycling processes within stormwater control measures: A review and call for research. In press, Water Research.

Neubauer, S, Piehler, M, Smyth, A, and Franklin, R. Saltwater intrusion modifies microbial community structure and decreases denitrification in tidal freshwater marshes. In press, Ecosystems.

Onorevole, K, S Thompson and M Piehler. 2018. Living shorelines enhance nitrogen removal capacity over time. Ecological Engineering 120:238-248.

- Dodd LF**, JC Caracappa, SR Fegley, JH. Grabowski and MF Piehler. 2018 Threat of predation does not affect *Crassostrea virginica* filtration. *Estuaries and Coasts*, 41 (1), 293-298.
- Crosswell, JR, IC 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) 29-45.
- Arfken, A, B Song, J Bowman and M Piehler. Denitrification potential of the eastern oyster microbiome using a 16S rRNA gene based metabolic inference approach. *PLoS One*, 12 (9), e0185071
- Velinsky, DJ, B Paudel, T Quirk, M Piehler, **A Smyth**. 2017. Salt marsh denitrification provides a significant nitrogen sink in Barnegat Bay, New Jersey. *Journal of Coastal Research* 78:70-78
- Fodrie, J, A. Rodriguez, R Gittman, J Grabowski, N Lindquist, C Peterson, M Piehler, J Ridge. 2017. Oyster reefs as carbon sources and sinks. *Proceedings of the Royal Society B* 284: 20170891.
- Gold, AC**, SP Thompson and MF Piehler. 2017. Water quality before and after watershed-scale implementation of stormwater wet ponds in the coastal plain. *Ecological Engineering*, 105:240-251.
- Gold AC**, Thompson SP, Piehler MF. 2017. Coastal stormwater wet pond sediment nitrogen dynamics. *Science of The Total Environment* 609:672-81.
- Kimbrow, DL, JH Grabowski, AR Hughes, MF Piehler, and JW White. 2017. Nonconsumptive effects of a predator weaken then rebound over time. *Ecology* 98: 656-667.
- Hughes, AR, TC Hanley, JE Byers, JH Grabowski, JC Malek, MF Piehler, DL Kimbro. 2017. Genetic by environmental variation but no local adaptation in juvenile oysters (*Crassostrea virginica*) in the Southeastern U.S. *Ecology and Evolution* 7: 697–709.
- Gehman, A. JH Grabowski, AR Hughes, DL Kimbro, MF. Piehler, and JE Byers. 2017. Predators, environment and host characteristics influence the probability of infection by an invasive castrating parasite, *Oecologia* 183: 139–149.
- Ensign, SH, CA Currin, MF Piehler, C Tobias. 2017. A method for using shoreline morphology to predict suspended sediment concentration in tidal creeks. *Geomorphology* 276: 280-288.
- Leech, DM, SH Ensign**, and MF 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: 823–836.
- Smyth, AR**, NR Geraldi, SP Thompson, and MF Piehler. 2016. Biological activity exceeds biogenic structure in influencing sediment nitrogen cycling in experimental oyster reefs. *Marine Ecology Progress Series* 560:173-183.
- Gittman, RK, CH. Peterson, C Currin, FJ Fodrie, MF Piehler, and JF Bruno. 2016. Living shorelines can enhance the nursery role of threatened estuarine habitats. *Ecological Applications* 26 (1), 249-263.
- Dodd, LF**, JH Grabowski, M.F. Piehler, I Westfield, JB Ries. 2015. Ocean acidification impairs crab foraging behavior. *Proceedings of the Royal Society B*.
- Baggett, LP, SP Powers, R Brumbaugh, L Coen, B DeAngelis, J Greene, B Hancock, S Morlock, B Allen, Denise B, D Bushek, J Grabowski, R Grizzle, T Grosholz, M La Peyre, M Luckenbach, K McGraw, M Piehler, S Westby, P zu Ermgassen. 2015. Setting guidelines for monitoring and evaluating the performance of oyster habitat restoration projects. *Restoration Ecology* 23: 737-745.
- Smyth, AR**, MF Piehler, and JH Grabowski. 2015. Habitat context influences nitrogen removal by restored oyster reefs. *Journal of Applied Ecology* 52 (3): 716-725.
- Byers, JE, JH. Grabowski, MF Piehler, AR Hughes, HW. Weiskel, JC Malek, DL Kimbro. 2015. Geographic variation in intertidal oyster reef properties and the influence of tidal prism. *Limnology and Oceanography* 60:1051–1063.

- Gittman, RK, FJ Fodrie, AM Popowich, DA Keller, JF Bruno, CA. Currin, CH Peterson and MF Piehler. 2015. Engineering away our natural defenses: An analysis of shoreline hardening in the United States. *Frontiers in Ecology and the Environment* 13:301-307.
- O'Meara, TA**, SP Thompson, MF Piehler. 2015. Effects of shoreline hardening on nitrogen processing in estuarine marshes of the U.S. mid-Atlantic coast. *Wetlands Ecology and Management* 23:385–394.
- Brodeur, MC, MF Piehler, and FJ Fodrie. 2015. Consumers mitigate effects of heat stress and nutrient enrichment on eelgrass (*Zostera marina* L.) at its southern range limit. *Marine Ecology Progress Series* 525 53-64.
- Kellogg, LM **AR Smyth**, MW Luckenbach, RH Carmichael, BL Brown, JC Cornwell, MF Piehler, MS. Owens, DJ Dalrymple and CB Higgins. 2014. Use of oysters to mitigate eutrophication in coastal waters. *Estuarine Coastal and Shelf Science* 151: 156-168.
- Kimbrow, DL, JE Byers, JH Grabowski, AR Hughes, and MF Piehler. 2014 The biogeography of trophic cascades on U.S. oyster reefs. *Ecological Letters* 17:845–854.
- Ensign, SH, DM Leech** and MF Piehler. 2014. Effects of nutrients and zooplankton on an estuary's phytoplankton: Inferences from a synthesis of 30 years of data. *Ecosphere*, 5:art89.
- Von Korff, BH**, MF Piehler and **SH Ensign**. 2014 Comparison of denitrification between river channels and their adjoining tidal freshwater wetlands. *Wetlands*, 34: 1047-1060.
- Geraldi, NR, **AR Smyth**, MF Piehler, and CH Peterson. 2014. Artificial substrates enhance non-native macroalga and N₂ production. *Biological Invasions*, 16: 1819-1831.
- Anderson, IC MJ Brush, MF Piehler, CA Currin, JW Stanhope, **AR Smyth**, JD Maxey and ML Whitehead. 2014. Impacts of climate related drivers on the benthic nutrient filter in a shallow photic estuary. *Estuaries and Coasts*, 37:46-62.
- Byers, JE, TL Rogers, JH Grabowski, AR Hughes, MF Piehler and DL Kimbro. 2014. Host and parasite recruitment correlated at a regional scale. *Oecologia* 174:731–738
- Hughes, AR, AFP Moore and MF Piehler. 2014. Independent and interactive effects of two associated facilitators on their habitat-providing host plant, *Spartina alterniflora*. *Oikos*, 123:488-499
- Smyth, AR**, NR. Geraldi, MF. Piehler. 2013. Oyster Mediated Benthic-Pelagic Coupling Modifies Nitrogen Pools and Processes. *Marine Ecology Progress Series* 493:23-30.
- Gonzalez, DJ, **AR Smyth**, MF Piehler, KJ McGlathery. 2013. Mats of the non-native macroalga, *Gracilaria vermiculophylla*, alter denitrification rates and nutrient fluxes on intertidal mudflats. *Limnology and Oceanography* 58(6):2101-2108.
- Ensign, SH**, MW Doyle and 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.
- Elsley-Quirk, T **A. Smyth**, M. Piehler, J. Mead, and D. Velinsky. 2013. The exchange of nitrogen through an urban tidal freshwater wetland in Philadelphia, PA USA. *Journal of Environmental Quality* 42: 584-595.
- Ensign, S, K Siporin**, M Piehler, M Doyle, and L Leonard. 2013. Hydrologic versus biogeochemical controls of denitrification in tidal freshwater wetlands. *Estuaries and Coasts* 36: 519-532.
- Higgins, C.B., C.R. Tobias, M.F. Piehler, **A.R. Smyth**, R. Dame, K. Stephenson, B.B. Brown. 2013. Impact of aquacultured oyster biodeposition on sediment N₂ production in Chesapeake Bay. *Marine Ecology Progress Series* 473:7-27.
- Smyth, A.R.**, S. P. Thompson, **K.N. Siporin**, W. S. Gardner, M.J. McCarthy, M. F. Piehler. 2013. Assessing nitrogen dynamics throughout the estuarine landscape. *Estuaries and Coasts* 36:44-55.

- Ensign, SH**, MW Doyle and MF Piehler. 2012. Tidal geomorphology affects phytoplankton at the transition from forested streams to tidal rivers. *Freshwater Biology* 57: 2141-2155.
- Grabowski, J.H., R.D. Brumbaugh, R. Conrad, A.G. Keeler, J. Opaluch, C.H. Peterson, M.F. Piehler, S.P. Powers, **A.R. Smyth**. 2012. Economic valuation of ecosystem services provided by oyster reefs. *Bioscience* 62: 900-909.
- Rodriguez, A.B., **M.N. Waters**, M.F. Piehler. 2012. Burning peat and reworking loess contribute to the formation and evolution of a large Carolina-bay basin. *Quaternary Research* 77(1): 171–181.
- Waters, M.N.**, M. F. Piehler, J.M. Smoak, and T. S. Bianchi. 2012. Algal community responses to shallow lake dystrophication. *Canadian Journal of Fisheries and Aquatic Sciences* 69 (8), 1433-1443.
- Moisander, PH, LA Cheshire, J Braddy, ES Calandrino, M Hoffman, MF Piehler HW Paerl. 2012. Facultative diazotrophy increases *Cylindrospermopsis raciborskii* competitiveness under fluctuating nitrogen availability. *FEMS Microbiology Ecology* 79 (3): 800–811
- Christian, R.R., V.F. Camacho-Ibar, M.F. Piehler and **A.R. Smyth**. 2012. Understanding the nitrogen cycle through network models in coastal ecosystems. *Treatise on Estuarine and Coastal Science*.
- Piehler, M.F. and **A.R. Smyth**. 2011. Habitat-specific distinctions in estuarine denitrification affect both ecosystem function and services. *Ecosphere* 2(1):art12.
- Wong, M. C.**, CH Peterson, M.F. Piehler. 2011. Evaluating estuarine habitats using secondary production as a proxy for food web support. *Marine Ecology Progress Series* 440: 11-25
- Converse, R.R., M. F. Piehler and R.T. Noble. 2011. Contrasts in concentrations and loads of conventional and alternative indicators of fecal contamination in coastal stormwater. *Water Research*, doi:10.1016/j.watres.2011.07.029.
- O'Connor, M.I., C.R. Violin, A. Anton, L.M. Ladwig and M.F. Piehler. 2011. Salt marsh stabilization affects primary producers at the marsh edge. *Wetlands Ecology and Management* 19: 131-140.
- Piehler, M.F., C.A. Currin, N.S. Hall. 2010. Estuarine intertidal sandflat benthic microalgal responses to in situ and mesocosm nitrogen additions. *Journal of Experimental Marine Biology and Ecology* 390:99-105.
- Stumpf, C.H., R.T. Noble, M.F. Piehler and S.P. Thompson. 2010. Loading of fecal indicator bacteria in North Carolina tidal creek headwaters: hydrographic patterns and terrestrial runoff relationships. *Water Research* 44: 4704-4715.
- Waters, M.N.**, M.F. Piehler, J. Smoak, and C. Martens. 2010. The development and persistence of alternative ecosystem states in a large, shallow lake. *Freshwater Biology* 55:1249-1261.
- McMillan, S.K.**, M.F. Piehler, S.P. Thompson and H.W. Paerl. 2010. Denitrification of nitrogen released from senescing algal biomass in coastal agricultural headwater streams. *Journal of Environmental Quality* 39:274-281.
- O'Connor, M.I., M.F. Piehler, **D.M. Leech**, A. Anton, and J.F. Bruno. 2009. Warming and resource availability shift food web structure and metabolism. *PLoS Biology* 7(8):e1000178.
- Piehler, M.F., J. Dyble, P.H. Moisander, A.D. Chapman, J. Hendrickson and H.W. Paerl. 2009. Interactions between nitrogen dynamics and the phytoplankton community in Lake George, Florida, USA. *Lake and Reservoir Management*, 25:1-14.
- Waters, M.N.**, M. F. Piehler, A.B. Rodriguez, J.M. Smoak and T.S. Bianchi. 2009. Shallow lake trophic status linked to late-Holocene climate and human impacts. *Paleolimnology* 42:51-64.
- Piehler, MF. 2008. Watershed management strategies to prevent and control cyanobacterial harmful algal blooms. *Advances in Experimental Medicine and Biology* 619:259-274.

- Ensign**, S.H., M.F. Piehler, and M.W. Doyle. 2008. Riparian zone denitrification affects nitrogen flux through a tidal freshwater river. *Biogeochemistry* 91:133–150.
- Peterson, C.H., K.W. Able, C. Frieswyk DeJong, M.F. Piehler, C.A. Simenstad, and J.B.Zedler. 2008. Practical proxies for tidal marsh ecosystem services. *Advances in Marine Biology* 54:221-266.
- Paerl, H.W. and M.F. Piehler. 2008. Nitrogen and Marine Eutrophication. In, D.G. Capone, M. Mulholland and E. Carpenter (Eds.). *Nitrogen in the Marine Environment*, Vol. 2. Academic Press, Orlando.
- Peterson, C.H., R.T. Barber, K.L. Cottingham, H.K. Lotze, C.A. Simenstad, R.R. Christian, M.F. Piehler, and J. Wilson. 2008. National Estuaries, Chapter 7. In (S. Julius, and J. West, eds.) SAP4.4 Adaptive options for climate-sensitive ecosystems and resources, U.S. EPA Global Climate Change Research Office, Washington, DC. 108 pp.
- Perovich, G, Q. Dortch, J. Goodrich, P.S. Berger, J. Brooks, T.J. Evens, C.J. Gobler, J. Graham, J. Hyde, D. Karner, D. O’Shea, V. Paul, H. Paerl, M. Piehler, B. Rosen, M. Santelmann, P. Tester and J. Westrick. 2008. Cyanobacterial blooms: Causes, prevention and mitigation. *Advances in Experimental Medicine and Biology* 619:185-216.
- Valdes-Weaver, LM, MF Piehler, JLPinckney, KE Howe, K Rossignol and HW Paerl. 2006. Long-term temporal and spatial patterns of phytoplankton community structure in a hydrologically variable estuarine continuum: the Neuse River Estuary-Pamlico Sound, NC, USA. *Limnology and Oceanography* 51:1410-1420.
- Paerl, H.W., B. L. Peierls, L. M. Valdes, A.R. Joyner, C. P. Buzzelli, M. F. Piehler, S. R. Riggs, R. R. Christian, J. S. Ramus, E. J. Clesceri, L. A. Eby, L. W. Crowder, and R. A. Luettich. 2006. Ecological impacts of a recent increase in frequency of Atlantic hurricanes in the Pamlico Sound System, NC: Implications for assessment and management of large estuaries. *Estuaries and Coasts* 29:1033-1045.
- Ensign, SH SK McMillan**, SP Thompson and MF Piehler. 2006. Nitrogen and phosphorus attenuation within the stream network of a coastal, agricultural watershed. *Journal of Environmental Quality* 35:1237-1247.
- Paerl, HW, LM Valdes, MF Piehler and CA Stow. 2006. Evaluating long-term estuarine water quality trends in the Neuse River Estuary, NC USA to differentiate nutrient management from climatic change. *Environmental Management* 37:422-436.
- Moisander, PH, MF Piehler, and HW Paerl. 2005. Diversity and activity of epiphytic nitrogen-fixers on standing dead stems of the salt marsh grass *Spartina alterniflora* based on phylogenetic analysis of nifH sequence, microscopy and rate measurements. *Aquatic Microbial Ecology* 39:271-279.
- Paerl, HW, MF Piehler LM Valdes, J Dyble, PH Moisander, JL Pinckney and TF Steppe. 2005. Determining anthropogenic and climatically-induced change in aquatic ecosystems using microbial indicators: An integrative approach. *Verh. Internat. Verein. Limnol.* 29:89-113.
- Twomey, LJ, MF Piehler and HW Paerl. 2005. Phytoplankton uptake of ammonium, nitrate and urea in the Neuse River Estuary, NC, USA. *Hydrobiologia* 533: 123-134.
- Piehler, MF, LJ Twomey, NS Hall and HW Paerl. 2004. Impacts of inorganic nutrient enrichment on the phytoplankton community structure and function in Pamlico Sound, NC USA. *Estuarine, Coastal and Shelf Science* 61(2) 197-209.
- Paerl, H.W., J. Dyble, J.L. Pinckney, L.M. Valdes, D.F. Millie, P.H. Moisander, J.T. Morris, B. Bendis, and M.F. Piehler. 2004. Using microalgal indicators to assess human and climatically induced ecological change in estuaries. *Estuarine Indicators*, S.A. Bartone (Ed). CRC Press, Boca Raton.
- Paerl, H.W., L. M. Valdes, A.R. Joyner, M. F. Piehler and M.E. Lebo. 2004. Solving problems resulting from solutions: The evolution of a dual nutrient management strategy for the

- eutrophying Neuse River Estuary, North Carolina, USA. *Environmental Science and Technology* 38: 3068-3073.
- Piehl, MF, V. Winkelmann, 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(2): 217-235.
- Poe, AC, MF Piehl, SP Thompson and HW Paerl. 2003. Denitrification in a constructed wetland receiving agricultural runoff. *Wetlands* 23(4) 817-826.
- Paerl, HW, J Dyble, PH Moisander, RT Noble, MF Piehl, JL Pinckney, TF Steppe, LJ Twomey and LM Valdes. 2003. Microbial Indicators of Aquatic Ecosystem Change: Current Applications to Eutrophication Studies. *FEMS Microbiology Ecology* 1561: 1-14.
- Paerl, HW, LM Valdes, JL Pinckney, MF Piehl, PH Moisander and J Dyble. 2003. Microalgae as indicators of estuarine and coastal ecological change. *Bioscience* 53(10):953-964.
- Piehl, MF, JS Maloney and HW Paerl. 2002. Bacterioplanktonic abundance, productivity and petroleum hydrocarbon biodegradation in marinas and other coastal waters in North Carolina, USA. *Marine Environmental Research* 54: 157-168.
- Piehl, MF, J. Dyble, PH Moisander, JL Pinckney and HW Paerl. 2002. Effects of modified nutrient concentrations and ratios on the structure and function of the native phytoplankton community in the Neuse River Estuary, North Carolina USA. *Aquatic Ecology* 36: 371-385.
- Piehl, MF, SP Thompson, J Dyble, PH Moisander, J Fear and HW Paerl. 2002. Biologically mediated nitrogen cycling in the Neuse River Estuary. UNC Water Resources Research Institute Rept.#339.
- Twomey, L. J., Piehl, M. F. and Paerl, H. W., 2002, Priority Parameters for Monitoring of Freshwater and Marine Systems and their Measurement, in *Environmental Monitoring*, edited by Inyang, H. I. and Daniels, J. L., in *Encyclopedia of Life Support Systems (EOLSS)*, Developed under the auspices of the UNESCO, Eolss Publishers, Oxford, UK
- Thompson, SP, MF Piehl, and HW Paerl. 2000. Denitrification in an estuarine headwater creek within an agricultural watershed. *Journal of Environmental Quality* 29(6): 1914-1923.
- Piehl, MF, JG Swistak, JL Pinckney, and HW Paerl. 1999. Stimulation of diesel fuel biodegradation by indigenous N₂ fixing microbial consortia. *Microbial Ecology* 38: 69-78.
- Piehl, MF, CA Currin, R Casanova, and HW Paerl. 1998. Development and N₂-fixing activity of the benthic microalgal community in transplanted *Spartina alterniflora* marshes in North Carolina. *Restoration Ecology* 6(3): 290-296.
- Piehl, MF, JG Swistak, JL Pinckney, and HW Paerl. 1997. Sub-lethal effects of petroleum pollution on *Spartina alterniflora* stem epiphytes. *Chemosphere* 35(11): 2665-2674.
- Piehl, MF and HW Paerl. 1996. Enhanced biodegradation of diesel fuel through the addition of particulate organic carbon and inorganic nutrients in coastal marine waters. *Biodegradation* 7: 239-247.

MANUSCRIPTS IN PEER REVIEW

- Hughes, AR, TC Hanley, JE Byers, JH Grabowski, T McCrudden, MF Piehl, DL Kimbro. Genetic diversity predicts success of juvenile oyster cohorts across multiple sites in the Southeastern U.S.
- Grabowski, J, T Gouhier, J Byers, L Dodd, AR Hughes, M Piehl, D Kimbro, Regional environmental variation and local species interactions influence biogeographic structure on oyster reefs.

BOOK REVIEWS

Piehler, MF *In: Limnology and Oceanography Bulletin 16 (3), 2007*. Ivan Valiela. 2006. Global Coastal Change. Blackwell Publishing.

Piehler MF *In: Quarterly Review of Biology 7:333, 2000*. Michael J. Kennish. 1998. Pollution Impacts on Marine Biotic Communities. CRC Press, Boca Raton, FL.

ABSTRACTS

Author on more than 40 papers over the past 5 years at national and international meetings.

Chaired session at the following meetings:

- 2011 International Estuarine Biogeochemistry Symposium
- 2009 Coastal and Estuarine Research Federation Meeting
- 2008 American Society Limnology Oceanography Summer Meeting
- 2005 American Society Limnology Oceanography Summer Meeting
- 2007 International Wetlands Biogeochemistry Symposium
- 1999 Estuarine Research Federation Meeting

STUDENTS AND POST-DOCTORAL RESEARCHERS

Current graduate students

Olivia Torano (MS student, Curriculum for Environment and Ecology)

Mollie Yacano (MS student, Marine Sciences)

Adam Gold (PhD Student, Curriculum in Environment and Ecology)

Former graduate students

Kathleen Onorevole (MS 2016, Marine Sciences). "Restoration of estuarine habitats supports changes in N cycling and removal over time"

Luke Dodd (PhD 2015, Marine Sciences). "Predator-prey relationships between *Crassostrea virginica* and several species of crabs in a human dominated world".

Caitlin White (MS 2014, Marine Sciences). "Quantifying Coastal Stream Metabolism Across a Gradient of Human Watershed Development", PhD Student, Oregon State.

Teri O'Meara (PhD 2014, Environmental Sciences and Engineering). "Anthropogenic effects on estuarine shoreline primary productivity and nutrient cycling". Post-doc, University of Auckland.

Ashley Smyth (PhD 2013, Marine Sciences). "Alterations in Nitrogen Cycling Resulting from Oyster Mediated Benthic-Pelagic Coupling". David H Smith Conservation Research Fellow, Virginia Inst. Marine Sci.

Ben Von Korff (MS 2011, Marine Sciences), "Spatial Variability of Denitrification in Tidal Freshwater Rivers". Mankato State University.

Scott Ensign (PhD 2010, Ecology), "The biogeochemistry and ecology of tidal freshwater rivers". Principal – AquACo and Planktos Instruments.

Rebecca Schwartz (MS 2010, Curriculum for the Environment and Ecology) "Land Use Affects the Timing and Magnitude of Material Delivery to Headwater Streams in Coastal North Carolina". Registered Nurse.

Matthew Waters (PhD 2007, Environmental Science and Engineering), "Historic transitions in primary producer communities in eastern North Carolina lakes", Assistant Professor, Auburn University.

Sara McMillan (PhD 2007, Environmental Sciences and Engineering), "Influence of hydrology and denitrification on nutrient dynamics in coastal headwater streams", (Co-advisor), Assistant Professor, Purdue University

Current graduate student committee member

Joseph Delasantro (PhD student, Curriculum for the Environment and Ecology)
Alexandria Hounshell (PhD student, Marine Sciences)
Kaylyn Siporin (PhD student, Curriculum for the Environment and Ecology)
Erika Young (PhD student, Marine Sciences)
Linghan Dong (PhD student, Marine Sciences)
Matthew Price (PhD student, Environmental Sciences and Engineering)
Rachel Canty (MS student, Environmental Sciences and Engineering)
Molly Bost (PhD student, Environmental Sciences and Engineering)

Graduate student committee member

Ann Arfken (PhD 2018, Marine Science, VIMS)
Danielle Keller (PhD 2018, Curriculum for the Environment and Ecology)
Margaret Esch (PhD 2017, Curriculum for the Environment and Ecology)
Stephanie Archer (PhD 2015, Applied Ecology, NCSU)
Stephanie Wear (PhD 2015, Marine Sciences)
Michelle Brodeur (MS 2014, Marine Sciences)
Rachel Gittman (PhD 2014, Curriculum for the Environment and Ecology)
Tingting Yang (PhD 2014, Marine Sciences)
Raul Gonzalez (PhD 2013, Environmental Sciences and Engineering)
Joey Crosswell (PhD 2013, Environmental Sciences and Engineering)
Brittani Koroknay (MS 2012, Marine Science, VIMS)
Julia Altman (MS 2012, Curriculum for the Environment and Ecology)
Dendy Lofton (PhD 2012, Environmental Sciences and Engineering)
Curt Stumpf (PhD 2011, Marine Sciences)
Linda D'Anna (PhD 2010, Curriculum in Ecology)
Liz Saunders (MS 2009, Marine Sciences)
Christopher Robin Mattheus (PhD 2009, Marine Sciences)
Reagan Converse (PhD 2009, Marine Sciences)
Erich Hester (PhD 2008, Curriculum in Ecology)
Joelene Diehl (MS 2007, Environmental Sciences and Engineering)

Post-Doctoral Researchers advised

Lindsay Dubbs (2010-2012), Assistant Director Albemarle Ecological Field Site
Dina Leech (2007-2009), Assistant Professor, Longwood University
Kent Wiles (2006-2008)
Natasha Wiles (2006-2008)
Melisa Wong (2005-2007), Environment Canada

Undergraduate interns and advisees

Laura Stephenson (2004-08)
Karen Fisher (2005)
Valerie Brock (2005)
Ashley Smyth* (2006)
Lisa Kirkley (2007)
Whitney Jenkins (2007)
Emily Nurminen (2008)
Tim Albrecht (2008)
Kaylyn Siporin* (2009-10)
Charles Scaife (2010)
Kate Walsh (2010)
Nicole Poletto (2011)
Audrey Crockett (2011)

Kathryn Meyer (2012)
Lisa Couper* (2012-13)
Dylan Catlett (2013)
Riley Brady (2013)
Adam Gold (2013)
Laura Dobroski (2014)
Chengliang Fan (2014)
Joseph Gould (2015, 2017)
Maddi Denton (2015)
Abbey Vinson (2015)
Hannah West (2016)
Alexis Racioppi (2017)
Peggy Mullin (2018)

* *Undergraduate honors thesis advisor*

INVITED LECTURES

- Distinguished Speaker – Texas A&M University-CC, College of Science and Engineering Corpus Christi, TX 2/16
- Northeastern University Marine Lab, Nahant, MA 3/15
- Duke University Marine Lab, Beaufort, NC, 2/15
- International Engineering Project Management Workshop, Beaufort, NC, 10/14
- Stewards of the Future, Beaufort NC, 10/14
- North Carolina Sea Grant Research Symposium, 3/14
- Exploring One Health Seminar Series, NC Biotechnology Center, RTP, 2/14
- Albemarle Pamlico National Estuary Partnership Symposium, New Bern, NC, 11/13
- Coastal Studies Institute, Science on the Sound, Wanchese, NC, 7/13
- Curriculum for the Environment and Ecology, UNC Chapel Hill, 1/13
- Virginia Institute of Marine Science, Gloucester Point, VA, 11/12
- Albemarle Ecological Field Site, Manteo, NC, 11/12
- Dauphin Island Sea Lab, Dauphin Island, AL, 3/10
- State of the River address: New River Festival, Jacksonville, NC, 5/08
- Carolina Seminar on Coastalization, Pine Knoll Shores, NC 11/07
- Duke University Program in Ecology, Durham, NC, 10/07
- National Academy of Sciences, Division on Earth and Life Studies, Water Science and Technology Board work group “Reducing Stormwater Discharge Contributions to Water Pollution”, Austin, TX, 5/07
- East Carolina University, Department of Biology, Greenville, NC, 2/07
- North Carolina State University, Department of Civil, Construction, and Environmental Engineering, 11/06
- Duke University Marine Laboratory Seminar Series, Beaufort, NC 11/05
- International Symposium on Cyanobacterial Harmful Algal Blooms, RTP, NC 9/05
- UNC-CH Curriculum in Ecology, Chapel Hill, NC, 4/05

- University of South Florida, Department of Civil and Environmental Engineering, Tampa, FL 3/04
- UNC-CH Marine Sciences Department Seminar Series, Chapel Hill, NC 2/04
- Fourth National Workshop on Constructed Wetlands/BMPs for Nutrient Reduction and Coastal Water Protection, Wilmington, NC, 6/03
- NC Department of Agriculture, Agronomy Division Meeting, Beaufort, NC 7/02
- NC Crop Rotation Association Annual Meeting, Beaufort, NC 7/02
- UNC-CH Department of Env. Sci. and Eng. Seminar, Chapel Hill, NC 3/02
- UNC-CH Marine Sciences Department Seminar Series, Chapel Hill, NC 2/02
- Gas Technology Institute, Des Plaines IL 11/01
- Coastlive.org, Morehead City, NC 12/00
- Southeastern Estuarine Rivers and Sounds Restoration Conference, Beaufort, NC 3/99

WORKSHOPS

- NC Oyster Summit: Promoting a Healthy Coastal Environment and Economy, 3/15, N.C. Museum of Natural Sciences, Raleigh, NC
- N.C. Oysters: A Workshop to Chart Future Restoration, NOAA Beaufort, NC 3/14
- Chesapeake Bay Oyster-Nitrogen Workshop, Wachapreague, VA, 1/13
- NOAA Oyster Restoration Success Metrics Workshop, Silver Spring, MD 12/11
- The Nature Conservancy Shellfish Ecosystem Services Writing Workshop, Key West, FL 3/09.
- NOAA in the Carolinas 4th Meeting: The Ecosystem Climate Connection, NOAA Laboratory, Beaufort NC, 2/08
- An Updated Look at Estuarine Shoreline Stabilization in Coastal North Carolina, Beaufort, NC 10/07
- US-China Harmful Cyanobacterial Workshop, Lake Taihu, Morehead City, NC 3/07
- NC Sea Level Rise Decision Maker's Workshop, Pine Knoll Shores, NC, 2/07
- Preliminary Review of Adaptation Options for Climate-Sensitive Ecosystems and Resources, National Estuaries, Annapolis, MD 1/07
- Alligator River /AP Peninsula Conservation Action Planning Workshop, Manteo, NC 2/06
- International Symposium on Cyanobacterial Harmful Algal Blooms, Causes, Prevention & Mitigation workgroup, Research Triangle Park, NC 9/05
- Albemarle Pamlico National Estuary Program Science and Technical Advisory Committee, Environmental Indicator Program, Landscape group, Smithfield NC 8/05
- SERDP Defense Estuarine Ecosystem Management Research Center Planning Workshop, Water quality working group, Atlantic Beach, NC 2/04
- NSF Collaborative Large-scale Environmental Analysis Network for Environmental Research (CLEANER) Workshop #4, Duke Univ. 11/03
- Southeastern Estuarine Rivers and Sounds Restoration Conference, Beaufort, NC 3/99
- Israel-North Carolina Biotechnology Workshop, NC Biotechnology Center 8/95
 - Participant: Environmental Remediation Work Group
- Fourth Annual Ecological Quality Assurance Workshop, USEPA, Cincinnati, OH 2/92

PROFESSIONAL ACTIVITIES

- North Carolina Sea Grant Advisory Board, 7/18-
- Southeast Coastal Ocean Observing Regional Association Board of Directors, 6/18-
- Lake Mattamuskeet Water Quality Research and Monitoring Working Group, 2/13-
- National Oyster Goals Project Science Advisory Team, The Nature Conservancy, 1/11-
- Executive Board of the Albemarle-Pamlico National Estuary Program Science & Technical Advisory Committee 6/08-6/18
- Albemarle-Pamlico National Estuary Partnership Science & Technical Advisory Committee, 1/06-6/18
- International Farming Corporation Scientific Advisory Committee, 3/13-8/17
- Steering Committee - North Carolina Sea Grant Student Training Workshop 6/15-4/16
- Delaware Sea Grant Review Panel 7/15
- Louisiana Sea Grant Review Panel 6/15
- EPA People, Prosperity, and the Planet Review Panel 3/15
- Marine Science & Education Partnership Coastal Marine Science Contest Judge 4/14
- NOAA River Herring Technical Expert Working Group 2/14
- NC Marine Fisheries Strategic Habitat Area Advisory Committee, 6/13-6/14
- US Fish and Wildlife Service/The Nature Conservancy Climate Change Adaptation Project Scientific Advisory Committee, 9/10-1/12
- Coastal Ecological Flows Working Group, 4/13-12/13
- PCS Phosphate Science Committee, 6/10-2/12
- Virginia Sea Grant Review Panel 10/10
- Maryland Sea Grant Review Panel 9/10
- Innovative Stormwater Advisory Work Group, NC Clean Water Management Trust Fund 2/08-7/08
- North Carolina Oyster Hatchery Advisory Committee, 9/05-3/08
- Board of Advisors for the Neuse River Basin *CLEANER* pilot project, 11/04-8/07
- Technical Advisor to the Monkey Island Preservation Workgroup, 4/05-8/07
- Steering committee for Sustainable Shoreline Protection and Development project, Carteret Community College, Morehead City, NC, 1/02 – 7-05
- NC Recreational Water Quality Storm Drain Rule Committee, 11/04-9/05
- Steering committee for the Pivers Island Stormwater Mitigation Project, 3/03 – 4/05
- Selection committee for Gov. and Mrs. Dan K. Moore Graduate Fellowship, 3/02
- Planning committee - Southeastern Estuarine Rivers & Sounds Restoration Conference, Beaufort, NC 3/99

TEACHING

- ENEC 698 – Capstone team research class. 2017, 2016, 2014, 2006
- Team teach ENEC 471 Human Impacts on Estuarine Processes – 2003-2015
- *Guest lecturer in:* Biological Oceanography (UNC-CH), Coastal Processes (Duke Univ.), Barrier Island Ecology (UNC-CH), Field Investigation of Coastal Processes (North Carolina State Univ.), Ecological Theories & Applications (UNC-CH)

PROFESSIONAL ASSOCIATIONS

- Coastal and Estuarine Research Federation
- Association for the Sciences of Limnology and Oceanography
- Atlantic Estuarine Research Society
- Society of Wetland Scientists
 - Vice Chair of the SWS South Atlantic Chapter 2009-2011

EDITORIAL

- Associate Editor – Estuarine Coastal and Shelf Science. 2014-2017
- Reviewer - Journals: Applied Environmental Microbiology, Biogeochemistry, Biotechnology Progress, Ecological Applications, Ecology Letters, Ecosystems, Estuaries and Coasts, Estuarine Coastal and Shelf Science, Hydrobiologia, Journal of Applied Ecology, Journal of Experimental Marine Biology and Ecology, Limnology and Oceanography, Marine Ecology Progress Series, Oecologia, Water Research, Water Resources Research, Wetlands
- Reviewer - Funding agencies: National Science Foundation, US Department of Agriculture, Sea Grant (Woods Hole, SC, NC, NJ, MD, TX, CA, VA, DE, RI), UNC Water Resources Research Institute, Cooperative Institute for Coastal and Estuarine Environmental Technology, Hudson River Foundation, National Oceanic and Atmospheric Administration, Coastal Response Research Center

UNIVERSITY SERVICE

- UNC GEAB Impact/Horizon Award Committee 2013-2016, 2018-
- Gillings School of Public Health/RTI IMPACT Seed Fund Program committee, 2018
- UNC Environmental Task Force 2016
- ECU Coastal Planning Committee 2016-17
- Chair, Admissions Committee, Curriculum for the Environment and Ecology, 2011-2018
- Admissions Committee, Dept. Marine Sciences UNC-CH, 2006-2016
- Chair, Research Committee, UNC Coastal Studies Institute 2015, 2016
- Search Committee, UNC Coastal Studies Institute Research Operations Manager 2015
- Search Committee, UNC IMS Business Officer 2015
- Impact Award Faculty Review Committee 2014, 2015, 2016
- Search Committee, UNC IMS Business Officer 2014
- Faculty Advisor - Graduate Environment and Ecology Association 2013-2018
- University Diversity Awards Committee, UNC-CH 2013-2014
- Research Planning Committee, UNC Coastal Studies Institute 2014-2016
- Academic Planning Committee, UNC Coastal Studies Institute 2012-2016
- Academic Operations Committee, UNC Coastal Studies Institute 2012-13
- Search Committee Chair, UNC IMS Business Officer 2012-13
- NSF Major Research Instrumentation UNC-CH Internal Review Committee 2011-12
- Review Committee, Director UNC-CH Institute of Marine Sciences 2009
- Admissions Committee, Curriculum for the Environment and Ecology, 2008-9
- Search Committee UNC Coastal Studies Institute Administrative Manager 2007
- Search Committee UNC Coastal Studies Institute Coastal Sustainability Specialist 2006

- Campus Design Committee, UNC Coastal Studies Institute 2005
- Community Visioning Committee, UNC Coastal Studies Institute 2005

MEDIA COVERAGE

- Downeast Journal – Public Radio East, August 2016
 - Coastal green infrastructure
- North Carolina Now – UNC TV, January 2016
 - Ecological impacts of dredged materials
- Downeast Journal – Public Radio East & Charlotte Observer, October 2015
 - Acidification and oyster reef function
- Quest – PBS, Science of Sustainability - October 2013
 - Oyster reef restoration
- Washington Post, 2013
 - Acidification impacts on oyster reefs and oyster predators
- On Point – NPR, 2013
 - Acidification impacts on oyster reefs and oyster predators
- Our State magazine web feature on the North Carolina coast, 2011
 - <http://www.ourstate.com/estuaries>
- Virginian Pilot, VA December 2006
 - Stormwater research on the Outer Banks
- Virginian Pilot, VA, also covered on WUNC public radio May 2006
 - Paleolimnological research on Lake Mattamuskeet
- Washington Daily News, NC, carried on AP Wire, reprinted in all regional papers and broadcast on local newscasts and regional National Public Radio, May 2006
 - Water quality research on Lake Mattamuskeet

CURRENT RESEARCH GRANTS

Title	Funding Source	Award- Duration	Role
Collaborative research to manage stormwater impacts on coastal reserves	NERRS Sci. Collab.	\$750,000 (\$300K Piehler) 11/16-10/19	PI
Potential for ecosystem restoration in Lake Mattamuskeet, NC	NC WRC	\$232,000 10/15-3/20	Lead PI
UNC Jordan Lake Nutrient Study	NC General Assembly	\$100,000 7/17-6/19	Technical Lead
Impacts of invasive phragmites	NC SG/ APNEP	\$9,950	Lead PI

COMPLETED RESEARCH GRANTS

Title	Funding Source	Award- Duration	Role
Collaborative Research: Microbial Regulation of Greenhouse Gas N ₂ O Emission from Intertidal Oyster Reefs	NSF	\$934,634 (\$209K Piehler) 8/12-8/17	PI
Design and Siting of Deposition Locations for Dredged Material from the Rodanthe Emergency Ferry Channel	NC DOT	\$371,000 (\$130K Piehler) 1/15-7/17	Investigator
Defense Coastal/Estuarine Research Program 2	SERDP	\$10 million (\$600K Piehler) 2/13-12/17	PI
Quantifying and communicating the function of estuarine habitats	NC Sea Grant	\$25,000 5/16-6/17	Lead PI
Assessing the effects of Gulf Stream turbines on Sargassum communities	NC Ocean Energy Program	\$61,471 (\$13K Piehler) 7/14-6/15	Co-PI
Collaborative Research: the influence of predators on community structure and resultant ecosystem function at a biogeographic scale	NSF	\$840,000 (\$175K Piehler) 6/10-5/15	PI
Assessing the potential for estuarine nitrogen removal using ecosystem engineers	NC Sea Grant	\$120,000 4/10-2/14	Lead PI
Monitoring, prioritization, and assessment of ocean outfalls of stormwater in Dare Co., NC	NC DENR	\$900,000 (\$550K Piehler) 5/06-12/14	Co-PI

Title	Funding Source	Award-Duration	Role
Denitrification in Barnegat Bay saltmarshes	NJ DEP	\$70,000 4/12-6/13	Lead PI
Public policy for non-traditional energy exploration off the coast of North Carolina	NC Ocean Energy Program	\$35,481 7/12-6/13	Co-PI
Using positive interactions between bivalves and seagrass to improve water quality and restore essential fish habitat in coastal North Carolina	APNEP	\$74,988 2/13-10/13	Co-PI
Defense Coastal/Estuarine Research Program	SERDP	\$13 million (\$400K Piehler) 8/07-2/13	PI
Collaborative Research: Linking hydrogeomorphology and denitrification in tidal freshwater coastal streams	NSF	\$280,000 (\$55K Piehler) 4/08-3/12	PI
Cataloging Environmental and Regulatory Conditions Affecting Marine Hydrokinetic Energy Extraction in NC	NC OE Program	\$111,984 (\$71K Piehler) 7/11-6/12	Lead PI
Cycling of nitrogen in Lake George, FL sediments	St. Johns River WMD	\$190,000 (\$125K Piehler) 3/09-9/11	Lead PI
Reassessing prey availability for river herring in the Chowan River Basin	FRG - NC Sea Grant	\$64,000 3/08-6/11	Lead PI
Sustainable Estuarine Shoreline Stabilization: Research, Education and Public Policy in NC	CICEET	\$717,278 (\$130K Piehler) 10/08-10/11	PI
SLR2005: Modeling estuarine habitat response to rising water level	NOAA	\$769,960 (\$320K Piehler) 10/05-9/09	PI
Evaluating a new Mechanism for Bay-Head Delta Back-Stepping Events	DOE National Inst Climatic Change Research	\$120,000 (\$0 Piehler) 6/07-8/08	Co-PI
Effects of tidal flow on riparian zone hydraulics and nitrogen dynamics	UNC WRII USGS	\$42,000 (\$42K Piehler) 8/05-7/07	Lead PI

Title	Funding Source	Award-Duration	Role
Attenuation of non-point source nitrogen pollution in a coastal watershed	US EPA	\$737,555 (\$380K Piehler) 1/03-1/07	Lead PI
Current status of water quality and primary production in Lake Mattamuskeet, NC	RJ Reynolds Jr. Fac. Award	\$7,500 1/06-12/06	PI
Eutrophication and trophic transfer in the Neuse River Estuary: Dynamics of nutrients and phytoplankton at the chlorophyll <i>a</i> maximum	NC Sea Grant	\$142,000 (\$25K Piehler) 7/04-8/06	Co-PI
Riparian shoreline assessment and mapping for the Chowan River, NC	APNEP	\$25,000 6/05-5/06	Project Coordinator
Benthic microalgal communities as biological indicators of ecosystem stress	UNC Univ. Research Council	\$4,000 6/00-5-02	PI
Riparian buffer construction at Open Grounds Farm, NC: Improved water quality through wetland construction	NC CWMTF	\$1,064,000 (\$250K Piehler) 10/98-12/03	Project Coordinator
Biologically mediated nitrogen dynamics in eutrophying estuaries	UNC WRI	\$119,000 (\$35K Piehler) 6/97-2/00	Co-PI
Factors controlling cyanobacteria in the Lower St. John's River System	PBS&J	\$113,000 (\$20K Piehler) 5/04-8/05	Co-PI
Mandated nitrogen loading reductions to the hydrodynamically variable Neuse River Estuary:	USDA	\$324,000 (\$80K Piehler) 7/00-8/04	Co-PI
Environmental Regulation of Harmful Cyanobacterial Blooms in the St. Johns River System, Florida	St. Johns River WMD	\$525,000 (\$100K Piehler) 6/00-6/03	Co-PI