Theresa O'Meara
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Education:

2014	PhD	University of North Carolina at Chapel Hill	Environmental Science and Engineering
2008	BS	Hope College (Magna Cum Laude)	Chemistry minor: Environmental Science
2008	BA	Hope College (Magna Cum Laude)	Biology minor: Environmental Science

Appointments:

2021-	R&D Associate Staff Scientist, Oak Ridge National Laboratory, Oak Ridge, TN
2021-	Research Associate, Smithsonian Environmental Research Center, Edgewater, MD
2017-2021	Postdoctoral Fellow, Smithsonian Environmental Research Center, Edgewater, MD
2016	Visiting Scientist, Boston University, MA, Fulweiler Lab
2014-2017	Postdoctoral Fellow, University of Auckland, New Zealand, Institute of Marine Science
2014	NSF-REU Research Coordinator, Samford University, AL
2013	Graduate Research Fellow, UNC-CH, NC, IMS
2012	North Carolina Coastal Reserve-North Carolina Sea Grant Fellow, UNC-CH, NC, IMS
2006	Michigan Space Grant Consortium Fellow, Hope College, MI
2005-2008	Undergraduate Researcher, Hope College, MI

Funding History:

Current

$1,000,000	US Department of Energy, Office of Science, Biological and Environmental Research, Environmental Systems Science, *co-investigator,* PI: Dr. Genevieve Noyce
$1,600,000	US Department of Energy, Office of Science, Biological and Environmental Research, Environmental Systems Science, *co-investigator,* PI: Dr. J. Patrick Megonigal
$1,000,000	US Department of Energy, Office of Science, Biological and Environmental Research, Environmental Systems Science, *co-investigator,* PI: Dr. J. Patrick Megonigal

Past

2019	$31,560	Oak Ridge National Laboratory, CCSI development funds, *principal investigator*
2016-2019	3,470,000NZD	National Science Challenge, Sustainable Seas, Dynamic Seas, *co-investigator,* PI: Prof. Simon Thrush
2016	$4,000	Woods Hole Sea Grant, *co-investigator*, PI: Dr. Robinson W. Fulweiler
2013	$11,764	UNC-CH Off Campus Dissertation Fellowship
2012	$10,000	North Carolina Coastal Reserve-North Carolina Sea Grant Fellowship
2006	$3,500	Michigan Space Grant Consortium Fellow, Hope College, Holland

Advising:

2016-2020	Stefano Schenone	University of Auckland	PhD (Defended)
2015-2016	Emma Gibbs	University of Auckland	MSc (Cato Bolam Consultants, Ltd.)
2015-2016	Marcus Cameron	University of Auckland	PhD (Auckland Regional Coucil)
2014	Will McKay	University of Auckland	intern (PhD in progress at UoA)
2008-2014	Maritza Mendoza	UNC-Chapel Hill	BS (EarthCorps)
2008-2014	Audrey Crockett	UNC-Chapel Hill	BS (Tetra Tech)

Teaching Experience:

Courses

2016 Marine Science 302, Dynamics of Marine Systems module 5 – Coastal ecosystem and nutrient processing in marine sediments, University of Auckland, New Zealand

2015 Field course at Leigh Marine Laboratory, Leigh, New Zealand for Shanghai Ocean University on macrofauna and estuarine ecosystem function (Course structure also used in my absence for Guangdong Ocean University in 2016)

2014 Courses on R, Excel, and Research Ethics, Samford University, AL

Guest lecturer

2017 MARINE 701 Current Issues in Marine Science "Life and Times of *Macomona*" - University of Auckland

2017 ENVSCI 733 Biodiversity Management and Conservation "Marine Conservation and Ecosystem Based Management" - University of Auckland

2011 Guest Lecturer, UNC-Chapel Hill ENVR 400 Seminar, "Dueling algae: macro- vs micro- algal dominance in response to a changing climate" - University of North Carolina at Chapel Hill

Peer-Reviewed Publications:

1. **O'Meara, TA**, PE Thornton, DM Ricciuto, G Noyce, R Rich, JP Megonigal Considering coasts: Adapting terrestrial models to characterize coastal habitats. (*in review*)
2. Hillman, JR, AM Lohrer, **TA O'Meara**, SF Thrush. Influence of restored mussel reefs on denitrification in marine sediments (*in review) Science of the Total Environment*.
3. Thrush SF, JE Hewitt, RV Gladstone-Gallagher, C Savage, C Lundquist, **T O'Meara**, A Vieillard, JR Hillman, S Mangan, EJ Douglas, DE Clarke, C Pilditch (2020) Cumulative stressors reduce the self-regulating capacity of coastal ecosystems. Ecological Applications. DOI: 10.1002/eap.2223
4. Hillman, JR, **TA O'Meara**, C Lundquist, SF Thrush (2020) Loss of large animals differentially influence nutrient fluxes across a heterogeneous marine intertidal soft-sediment ecosystem. Ecosystems
5. **O'Meara T**, JE Hewitt, SF Thrush, EJ Douglas, AM Lohrer (2020) Denitrification and the role of macrofauna along estuarine gradients in nutrient and sediment loading. Estuaries and Coasts DOI: 10.1007/s10021-020-00517-4
6. Crawshaw J, **TA O'Meara**, C Savage, B Thomson, F Balter, S Thrush (2019) Carbon lability influences nitrogen cycling rates in temperature estuary sediment. Biogeochemistry 145: 315-335.
7. Schenone S, **TA O'Meara**, SF Thrush (2019) Non-linear effects of macrofauna functional trait interactions on biogeochemical fluxes in marine sediments change with environmental stress. Marine Ecology Progress Series 624:13-21
8. **O'Meara T**, E Gibbs, SF Thrush (2018) Rapid organic matter assay (ROMA) of carbon degradation across depth gradients in marine sediments, Methods in Ecology and Evolution 9: 245-253.
9. Ray N, **T O'Meara**, T Williamson, JL Izursa (2018). Carbon dioxide release from shell formation must be included in LCA of bivalves. International Journal of Life Cycle Assessment 23:5 1042-1048.
10. **O'Meara T**, JR Hillman, SF Thrush (2017) Rising tides, cumulative impacts and cascading changes to estuarine ecosystem functions, Scientific Reports 7, Article number: 10218.
11. **O'Meara T**, SP Thompson, MF Piehler (2015). Effects of shoreline hardening on nitrogen processing in estuarine marshes of the US Mid-Atlantic Coast. Wetlands Ecology and Management. 23(3): 385-394
12. Peterson JW, **TA O'Meara**, MD Seymour (2014) Effects of Added Fe°, Fe_3O_4 and Fe_2O_3 on Sorption of Cephalosporin Antibiotic in Quartz-rich Sands. Journal of Environmental Engineering 140(1): 40-47
13. Keeler A, L Dubbs, **T O'Meara** (2013) Permitting, Risk, and Marine Hydrokinetic Energy Development. The Electricity Journal 26(10): 64-74
14. Peterson JW, **TA O'Meara**, MD Seymour, W Wang, B Gu (2009) Sorption mechanisms of cephapirin, a veterinary antibiotic, onto quartz and feldspar minerals as detected by Raman spectroscopy. Environmental Pollution 157(6): 1849-1856
15. Peterson JW, **TA O'Meara**, MD Seymour (2008) Experimental Investigation of Cephapirin Adsorption to Quartz Filter Sands and Dune Sands. Hydrogeology Journal 16(5): 879-892

Final Reports:

O'Meara, T (2013) Changes in denitrification rate from the maritime forest to the shallow sub-tidal in natural

and altered salt marsh systems. 2012 NC Coastal Reserve-NC Sea Grant Coastal Research Fellowship. Final Report.

Fear JM, Currin CA (2012) Sustainable Estuarine Stabilization: Research, Education and Public policy in North Carolina. Final Report. The NOAA/UNH Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET). Grant Number NA06NOS4190167, *Co-author on nutrient cycling*

Thesis:

O'Meara, T (2014) Anthropogenic Effects on Estuarine Shoreline Primary Productivity and Nutrient Cycling, UNC-CH Library, April 2014

Invited Presentations:

O'Meara, T (2020) Roots in Models: Aerenchyma and nutrient processing in PFLOTRAN, Oak Ridge National Laboratory, virtual, October 22

O'Meara, T (2020) Estuarine Climate Models, East Carolina University, virtual, September 9

O'Meara T (2020) TAI modelling in ELM, Oak Ridge National Laboratory, Oak Ridge, TN January 24

O'Meara T (2019) Understanding the Junction Between Chemistry and Function: Using biogeochemical fluxes to understand ecosystem function in estuaries, Eckerd College, St. Petersburg, FL November 19

O'Meara T (2019) From Terrestrial to Coastal: ModEx projects in the TAI, U.S. Department of Energy, Biological and Environmental Research, Germantown, MD September 11

O'Meara T (2018) Rapid assessment of organic matter degradation in marine sediments (ROMA method). Oak Ridge National Laboratory, Oak Ridge, TN February 23

O'Meara T, SF Thrush (2016) Effects of multiple environmental stressors on networked ecosystem functions. University of New South Wales, Sydney, Australia March 14

O'Meara T, SF Thrush (2016) Estuaries and the Anthropocene. Faculty of Science Postdoctoral Society. University of Auckland, Auckland, New Zealand November 15

O'Meara T (2012) Denitrification from the Maritime Forest to the Shallow Subtidal. The 2012 National Estuarine Research Reserve/National Estuarine Research Reserve Association Annual Meeting, Shepherdstown, WV, November

O'Meara T (2012) Changes in denitrification from the maritime forest to the shallow subtidal in natural and restored systems. National Estuarine Research Reserve Staff Meeting, Pivers Island, NC May 1

O'Meara TA (2006), Experimental Investigation of Antibiotic Adsorption in Sand-Iron Systems. Michigan Academy of Science, Arts, and Letters Annual Meeting, Rochester, MI, March

O'Meara TA, JW Peterson, and MD Seymour (2006) Experimental Investigation of Antibiotic Adsorption in Sand-Iron Systems: Implications for Transport in Groundwater. Michigan Space Grant Consortium Annual Meeting, Ann Arbor, MI, October

O'Meara TA, JW Peterson, and MD Seymour (2006) Adsorption of antibiotics to sands amended with magnetite, hematite, and zero-valent Fe. Hope College Celebration of Undergraduate Research, Holland, MI, March

O'Meara TA, JW Peterson, and MD Seymour (2005) Fate and transport of antibiotics in sand aquifers. Hope College Celebration of Undergraduate Research, Holland, MI March

Meeting Presentations:

O'Meara T, D Ricciuto, G Noyce, B Sulman, F Yuan, R Rich, P Thornton, P Megonigal (2019) Considering coasts: adapting terrestrial models to characterize coastal habitats. *Oral Presentation*. Coastal and Estuarine Research Federation. Mobile, AL USA, November

O'Meara T, P Thornton, G Noyce, F Yuan, D Ricciuto, JP Megonigal (2019) Modelling coastal wetland vegetation dynamics. *Oral presentation*. 6th Annual GCReW Symposium, Edgewater, MD, March

O'Meara T, P Megonigal, G Noyce, R Rich, F Yuan, D Ricciuto, P Thornton (2019) Building Coastal Models with the Salt Marsh Accretion Response to Temperature eXperiment (SMARTX) Environmental System Science PI Meeting, Potomac, MD, April 30 – May 1

Thornton P, T O'Meara (2019) ORNL E3SM progress updates. *Oral Presentation*. Spring E3SM Project Meeting, Westminster, CO March

O'Meara T, P Thornton, JP Megonigal (2018) Considering coasts: adapting terrestrial models to characterise

coastal habitats. *Poster*. American Geophysical Union, Washington, D.C. USA, December

O'Meara T, JR Hillman, and SF Thrush (2018) Mussels vs mud: Using mussels to restore ecosystem function across turbidity gradients. *Oral presentation.* World Conference on Marine Biodiversity, Montréal, Canada May

O'Meara T, JR Hillman, and SF Thrush (2017) Rising tides, cumulative impacts and cascading changes to estuarine ecosystem functions. *Oral presentation.* New Zealand Marine Sciences Society, Christchurch, New Zealand July

O'Meara T (2016) Getting tanked up in preparation for climate change. *Oral Presentation.* Estuarine Coastal Sciences Association, Bremen, Germany September

O'Meara T (2015) Denitrifiers in the coastal gradient. *Oral Presentation.* New Zealand Marine Sciences Society Conference, Auckland, New Zealand July

O'Meara T and MF Piehler (2014) Denitrifiers in the coastal gradient: Potential Contributions to the N_2O budget. *Poster*. Joint Aquatic Sciences Meeting, Portland, OR, May

O'Meara T and MF Piehler (2011) Dueling Algae: macro- vs micro- algal dominance in a warming world. *Oral Presentation*. UNC Institute of Marine Science Student-Led Symposium, Morehead City, NC, September

O'Meara T and MF Piehler (2011) Effects of shoreline hardening on nitrogen processing in salt marshes. *Poster*. 11th International Estuarine Biogeochemistry Symposium, Atlantic Beach, NC May 2011

O'Meara TA, JW Peterson, and MD Seymour (2006) Cephapirin Adsorption in Sand-Iron Systems: Effects of Hematite, Magnetite, and Zero-valent Iron. *Oral Presentation*. Annual Meeting of the Geological Society of America, Philadelphia, PA, October

O'Meara TA, JW Peterson, and MD Seymour (2005) Experimental Investigation of Cephapirin Adsorption to Sands: Implications for Transport of Antibiotics in Groundwater. *Poster*. Annual Meeting of the Geological Society of America, Salt Lake City, UT October

Media Communications:

2017	Interview	"Amazing Water People :: Teri O'Meara" for *Candace Loy, OceanMade*
2016	Interview	"Fellowship Serves to Protect State's Coasts, Train Future Stewards" Coastwatch Currents, September 2016
2013	Article	"SEA SCIENCE: Traversing Untrodden Ground" Coastwatch, Spring 2013

Professional Service:

Reviewer/Review Editor

Journals:	Frontiers in Marine Ecosystem Ecology, Marine Ecology Progress Series, Journal of Environmental Management, Wetlands Ecology and Management, Atmosphere, Wetlands, Global Biogeochemical Cycles
Proposals:	Maryland Sea Grant (2019), U.S. Department of Energy (2019)
Committee:	Hiring committee for coastal biogeochemistry and vegetation modelling postdoc positions, Oak Ridge National Laboratory (2020)

Workshops

2020	Participant	*SPRUCE 2020 – Methane Cycling* Oak Ridge National Laboratory, Oak Ridge, USA
2019	Organizer	*ModEx Approaches to Research on Shorelines (MARSh)* Oak Ridge National Laboratory, Oak Ridge, USA
2017	Organizer	*Identifying and predicting marine tipping points* University of Auckland, Leigh Marine Laboratory, New Zealand
2017	Participant	*Identifying factors driving nutrient removal in the coastal marine environment* NIWA, Hamilton, New Zealand

Conferences

2020	Abstract review, *ESA Annual Meeting*, Salt Lake City, UT August 2-7
2019	Student presentation judge, *CERF Biennial Meeting*, Mobile, AL November 3-7
2015	Session moderator & student presentation judge, *NZMSS-OCS*, Auckland, New Zealand July 6-9
2014	Session moderator & abstract review, *Water Microbiology Conference*, Chapel Hill, NC May 5-7

K-12 Education

2018	Oak Ridge National Laboratory Flame Challenge submission, video participant
2017	Dive against debris, Ti Point (New Zealand) clean up, March 2017
2013	Volunteer/videographer assistant, Scientific Research and Education Networking (SciREN) Event, Pine Knoll Shores Aquarium, NC April 25, 2013
2012-2014	Volunteer, Sunshine Lady Boys and Girls Club, Morehead City, NC
2011	Volunteer, Higher Education Readiness Opportunity (HERO) Program, marine science introduction, Morehead City, NC, August 2, 2011

Professional Societies:

American Geophysical Union (AGU), New Zealand Marine Science Society (NZMSS), Coastal & Estuarine Research Federation (CERF)

Honors and Awards:

2016	1st place, invited presenters, FoS Postdoctoral Society, University of Auckland
2008	Sigma Xi Student Research Award, Hope College (Chemistry Department)
2008	Sigma Xi Student Research Award, Hope College (Biology Department)
2004-2008	Presidential Scholarship, merit based, Hope College

Skills:

Analytical Instrumentation Experience

Proficient: O_2 planar optodes**,** ECD, GC/MS, LC/MS, MIMS, HPLC, HOBO water level, temperature, and light loggers, InSitu water level loggers, YSI Sondes, ISCO water samplers, Fluorometry, Spectrophotometry UV/Vis, LI-COR PAR detector, Lachat nutrient auto analyzer

Familiar: NMR Spectroscopy (Proton and Carbon), Photosynthetron, FTIR Spectroscopy, AA Spectroscopy

Basic: PCR, Gel electrophoresis, LI-COR CO_2/O_2

Boating/water related

Canoeing, kayaking, New Zealand Coast Guard Boatmaster, PADI rescue diver, reserve crewmember for R/V Capricorn (UNC-Chapel Hill)

Miscellaneous field projects

Mussel bed restoration; Whole stream metabolism; Oyster recruitment, settlement, and growth; Tidal freshwater denitrification; Stream monitoring at Camp Lejeune, NC; Surface elevation table (SET) installation; Shark tagging; Spider hunting; Groundwater well installation and maintenance; Developing colonies of *Folsomia candida*

Collaborators & Co-Authors:

Principal Investigators

F Baltar (University of Vienna), J Crawshaw (Bay of Plenty Regional Council), K Dafforn (University of New South Wales), P Dijkstra (Northern Arizona University), EJ Douglas (NIWA), L Dubbs (UNC-CH, UNC-CSI), RW Fulweiler (Boston University), R Gittman (ECU), R Gladstone-Gallagher (University of Auckland), G Guntenspergen (USGS), E Herbert (Ducks Unlimited), J Hewitt (NIWA), JR Hillman (University of Auckland), J Hope (University of Auckland), JL Izurza (University of Maryland), E Johnson (University of New South Wales), P Kangas (University of Maryland), M Kirwan (VIMS), A Lohrer (NIWA), C Lundquist (NIWA), JP Megonigal (SERC), G Noyce (SERC), JW Peterson (Hope College), M. Piehler (UNC Chapel Hill), C Pilditch (University of Waikato), N Ray (Boston University), D Ricciuto (ORNL), R Rich (SERC), A Rietl (VIMS), C Savage (University of Otago), K Sendall (Ryder University), M Seymour (Hope College), F Stephenson (NIWA), B Sulman (ORNL), S Thomas (University of Otago), SP Thompson (UNC Chapel Hill), B Thomson (University of Otago), P Thornton (ORNL), SF Thrush (University of Auckland), A Vieillard (University of Auckland), T Williamson (University of Maryland), F Yuan (ORNL)

Graduate Students

D Clarke (Cawthron Institute), J Hamilton (University of Auckland), S Mangan (University of Waikato), N Ray (Boston University), S Schenone (University of Auckland), S Thomas (University of Otago), S Vadillo (University of New South Wales), K Yang (University of Auckland), A Vieillard (University of Auckland)