


# TROY D. HILL

South Florida Natural Resources Center, National Park Service  
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## EDUCATION

### **Yale University**, New Haven, Connecticut, USA

- Ph.D. in Forestry and Environmental Studies 2015
  - Thesis: Sediment and vegetation dynamics in coastal wetlands of Connecticut and New York, USA
  - Advisors: Dr. Shimon Anisfeld, Dr. Gaboury Benoit
- Master of Philosophy 2012
- Master of Environmental Science 2008
  - Thesis: Carbon dynamics in Long Island Sound salt marshes: impacts of nutrients and hydrology
  - Advisor: Dr. Shimon Anisfeld
  - Concentration: Water Science, Policy, and Management

### **Clark University**, Worcester, Massachusetts, USA

- B.A. in Environmental Science and Policy; minor: Economics 2006
  - Thesis: A mixed-methods approach to explaining 'suburban drought' in humid eastern Massachusetts
  - Advisor: Dr. Colin Polsky
  - Graduated *summa cum laude* with Highest Departmental Honors

## PROFESSIONAL EXPERIENCE

### **National Park Service**, U.S. Department of Interior

- Hydrologist GS-1315-12-05 4 Aug 2019 – present
  - Provide technical products and analysis for natural resource management in south Florida National Parks/Preserves
  - Support adaptive management efforts associated with Everglades restoration
- Environmental Specialist GS-0401-11-09 2 Apr 2018 – 3 Aug 2019
  - Adapt modeling tools and methods for water quality trend analysis to NPS datasets
  - Develop geospatial agent-based models for scenario analysis of sea level rise and changing freshwater inputs
  - Provide written and verbal technical guidance on research priorities and water resource management

### **Office of Research and Development**, U.S. Environmental Protection Agency

- Postdoctoral Biologist GS-0401-12-03 27 Dec 2015 – 1 Apr 2018
  - Research combined wetland plant physiology, ecosystem ecology, and biogeochemistry
  - Conducted impact and benefit assessments for coastal restoration projects, including erosion control efforts
  - Led research projects evaluating nutrient interception capacity of coastal wetlands and effects of restoration
  - Applied stable isotopes to identify effects of environmental change on wetland carbon storage and nutrient cycling
  - Developed an open-source R package (coreCT) for image analysis
  - Communicated results to diverse audiences; general public, resource managers, and researchers

### **Ecosystem Ecology and Biogeochemistry Laboratory**, Louisiana Universities Marine Consortium

- Postdoctoral Research Associate (GS-12 equivalent) 27 Jul 2015 – 25 Dec 2015
  - Primary topic: Oil spill impacts on wetland plant ecology
  - Lead teams conducting ecological inventories of Gulf Coast wetlands
  - Studied ecological and biogeochemical effects of oil spills, river diversions, and saltwater intrusion on wetlands
  - Analyzed highly-dimensional times series data exploring environmental drivers of plant and ecosystem dynamics

### **Anisfeld Environmental Chemistry Laboratory**, Yale University

- Research Assistant 30 Aug 2009 – 3 Jul 2015
  - Primary topic: Coastal ecosystem response to ecological and hydrologic change
  - Collected empirical data and modeled sediment dynamics in fresh, brackish, and saline wetlands
  - Classified satellite imagery using supervised and unsupervised methods, and analyzed vegetation change using GIS
  - Developed R package (VulnToolkit) to characterize tidal flooding regimes, interface with NOAA databases
  - Designed research projects, plans, and goals for understanding population and ecosystem response to nutrient pollution
  - Developed and managed nuisance flood monitoring project with citizen group

## PUBLICATIONS

## PEER-REVIEWED MANUSCRIPTS

(\*student co-author for whom I was a principal mentor)

- 1 J. Park, J. Redwine, T.D. Hill, and K. Kotun. 2019. "Water resource and ecotone transformation in coastal ecosystems," *Ecological Modelling*, 405: 69–85.
- 2 Dutton, C.L., A.L. Subalusky, T.D. Hill, J.C. Aleman, E.J. Rosi, K.B. Onyango, K. Kanuni, J.A. Cousins, A.C. Staver, and D.M. Post. 2019. "A 2000-year sediment record reveals rapidly changing sedimentation and land use since the 1960s in the Upper Mara-Serengeti Ecosystem," *Science of the Total Environment*, 664: 148–160.
- 3 Hill, T.D., N.R. Sommer\*, C.R. Kanaskie\*, E.A. Santos, and A.J. Oczkowski. 2018. "Nitrogen uptake and allocation estimates for *Spartina alterniflora* and *Distichlis spicata*," *Journal of Experimental Marine Biology and Ecology*, 507: 53–60.
- 4 Hill, T.D., N.R. Sommer\*, C.R. Kanaskie\*, E.A. Santos, and A.J. Oczkowski. 2018. "Nitrogen and carbon concentrations and stable isotope ratios: Data from a <sup>15</sup>N tracer study in short-form *Spartina alterniflora* and *Distichlis spicata*," *Data In Brief*, 21: 466–472.
- 5 Kemp, A.C., A.J. Wright, R.J. Edwards, R.L. Barnett, M.J. Brain, R.E. Kopp, N. Cahill, B.P. Horton, D.J. Charman, A.D. Hawkes, T.D. Hill, O. van de Plassche. 2018. "Relative sea-level change in Newfoundland, Canada during the past 3000 years," *Quaternary Science Reviews*, 201: 89–110.
- 6 Hill, T.D., B.J. Roberts. 2017. "Effects of seasonality and environmental gradients on *Spartina alterniflora* allometry and primary production," *Ecology and Evolution*, 7(22): 9676–9688.
- 7 A.C. Kemp, T.D. Hill, C. Bernhardt, C.H. Vane, N. Cahill, P.M. Orton, S.A. Talke, K. Sanborn, E.K. Hartig. 2017. "Relative sea-level trends in New York City during the past 1500 years," *Holocene*, 27(8): 1169–1186.
- 8 Brain, M.J., A.C. Kemp, A.D. Hawkes, C.H. Vane, N. Cahill, T.D. Hill, S.E. Engelhart, J.P. Donnelly, and B.P. Horton. 2017. "The contribution of mechanical compression and biodegradation to compaction of salt-marsh sediments and relative sea-level reconstructions," *Quaternary Science Reviews*, 167: 96–111.
- 9 Anisfeld, S.C., T.D. Hill, D.R. Cahoon. 2016. "Elevation dynamics in a restored versus a submerging salt marsh in Long Island Sound," *Estuarine, Coastal and Shelf Science*, 170: 145–154.
- 10 Schultz\*, R.A., S.C. Anisfeld, and T.D. Hill. 2016. "Submergence and herbivory as divergent causes of marsh loss in Long Island Sound," *Estuaries and Coasts*, 39(5): 1367–1375.
- 11 Witter, R.C., G.A. Carver, R.W. Briggs, G. Gelfenbaum, R.D. Koehler, S. La Selle, A.M. Bender, S. Engelhart, E. Hemphill-Haley, T.D. Hill. 2016. "Unusually large tsunamis frequent a currently creeping part of the Aleutian megathrust," *Geophysical Research Letters*, 43(1): 76–84.
- 12 Hill, T.D., S.C. Anisfeld. 2015. "Coastal wetland response to sea level rise in Connecticut and New York," *Estuarine, Coastal and Shelf Science*, 163: 185–193.
- 13 Kemp, A.C., A.D. Hawkes, J.P. Donnelly, C.H. Vane, B.P. Horton, T.D. Hill, S.C. Anisfeld, A.C. Parnell, and N. Cahill. 2015. "Relative sea-level change in Connecticut (USA) during the last 2200 years," *Earth and Planetary Science Letters*, 428: 217–229.
- 14 Anisfeld, S.C., T.D. Hill. 2012. "Fertilization effects on elevation change and belowground carbon balance in a Long Island Sound tidal marsh," *Estuaries and Coasts*, 35(1): 201–211.
- 15 Butler, S.M., J.M. Melillo, J.E. Johnson, J. Mohan, P.A. Steudler, H. Lux, E. Burrows, R.M. Smith, C.L. Vario, L. Scott, T.D. Hill, N. Aponte\*, and F. Bowles. 2012. "Soil warming alters nitrogen cycling in a New England forest: implications for ecosystem function and structure," *Oecologia*, 168: 819–828.

- 16 Melillo, J.M., S. Butler, J. Johnson, J. Mohan, P.A. Steudler, H. Lux, E. Burrows, F. Bowles, R. Smith, L. Scott, C. Vario, T. Hill, A.J. Burton, Y. Zhou, and J. Tang. 2011. "Soil warming, carbon-nitrogen interactions and forest carbon budgets," *Proceedings of the National Academy of Sciences*, 108(23) : 9508–9512.
- 17 Hill, T.D. and C. Polsky. 2007. "Suburbanization and drought: A mixed methods vulnerability assessment in rainy Massachusetts," *Environmental Hazards*, 7(4): 291–301.
- 18 Hill, T., C. Polsky. 2005. "Adaptation to the effects of suburbanization and drought in central Massachusetts," *Geographical Bulletin*, 47(2): 85–100.

#### BOOK CHAPTERS AND NON-PEER-REVIEWED MANUSCRIPTS

- 1 Subalusky, A., C. Dutton, T. Hill, J. Aleman, C. Staver, and D. Post. 2017. "Reading the historical record of the Mara River using sediment cores from the Mara wetland," *World Wildlife Fund*.
- 2 Hill, T.D., S.C. Anisfeld. 2013. "Sea level rise and sediment: recent salt marsh accretion in the Hudson River estuary. 1-32 pp. In S.H. Fernald, D.J. Yozzo and H. Andreyko (eds.), Final Reports of the Tibor T. Polgar Fellowship Program," *Hudson River Foundation*.
- 3 Polsky, C., S. Assefa\*, K. Del Vecchio\*, T. Hill , L. Merner\*, I. Tercero\*, and R. Pontius. 2009. "The mounting risk of drought in a humid landscape: structure and agency in suburbanizing Massachusetts." In: Sustainable Communities on a Sustainable Planet – The Human-Environment Regional Observatory Project. Yarnal, B., C. Polsky, and J. O'Brien, eds." *Cambridge University Press*.
- 4 Hill, T. 2008. "Nutrient effects on belowground production in Long Island Sound salt marshes." *Center for Coastal and Watershed Systems Newsletter*.

#### SELECTED CONFERENCE AND WORKSHOP PRESENTATIONS

- 1 Hill, T.D., and K. Kotun. "Solute transport into Shark River Slough." Oral presentation at Greater Everglades Ecosystem Restoration meeting, April 2019.
- 2 Rossi, R.E., T.D. Hill, and B.J. Roberts. "Seasonal and annual variation of allometry and primary production of *Spartina alterniflora*." Oral presentation at Gulf of Mexico Research Institute meeting, February 2019.
- 3 Engelhart, S.E., R.B. Stearns, B.T. Halavik, A.C. Kemp, N. Cahill, D. Reide Corbett, M.J. Brain, T.D. Hill. "A 3200-year high-resolution reconstruction of relative sea level from Rhode Island, USA." Oral presentation at EGU General Assembly meeting, April 2018.
- 4 Halavik, B.T., S.E. Engelhart, T.D. Hill. "Temporal and Spatial Variability in Relative Sea Level from Narragansett Bay, Rhode Island (USA)." Poster presentation at American Geophysical Union meeting, New Orleans, LA, December 2017.
- 5 Hill, T.D., A. Oczkowski, E. Santos, N. Moore\*, C. Kanaskie\*, R. Martin, C. Wigand, and E. Davey. "Multiple-stressor impacts on above- and belowground allocation in *Spartina alterniflora* and *Distichlis spicata*." Oral presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.
- 6 Rietl, A.J., T.D. Hill, A. Chelsky, B.J. Roberts. A multi-year record of plant biomass, allometry, and primary production in Louisiana salt marshes. Oral presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.
- 7 Davey, E.W., T.D. Hill, J. Turek, M. O'Reilly, L. Blum, R.M. Martin, and C. Wigand. Assessing saltmarsh recovery using improved computer-aided tomography technology. Poster presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.
- 8 Turek, J., M. Cogliando, M. O'Reilly, T. Hill, C. Wigand, E. Davey. Plant community succession: 15 years post-tidal restoration at Padanaram Marsh. Oral presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.

- 9 Schoell, M., S. Ayvazian, T. Hill, A. Gerber, M. Chintala, D. Grunden, C. Strobel, and K. Rocha. Living Shoreline on Martha's Vineyard: Monitoring & Assessing Marsh Stabilization, Restoration Benefits, and Nitrogen Removal. Oral presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.
- 10 Stearns, R.B., S.E. Engelhart, A.C. Kemp, N. Cahill, B.T. Halavik, D.R. Corbett, M.J. Brain, and T.D. Hill. A High-Resolution Reconstruction of Late-Holocene Relative Sea Level in Rhode Island, USA. Oral presentation at Coastal and Estuarine Research Federation meeting, Providence RI, November 2017.
- 11 Merrill, N., S. Balogh, A. Piscopo, K. Mulvaney, and T. Hill. When and where to intervene? Coastal nutrient loading, groundwater travel times, and estuary dynamics. Oral presentation at Fourth Water Research Conference: The Role of Water Technology Innovation in the Blue Economy, Amherst MA, September 2017.
- 12 Wigand, C., R. Martin, S. Balogh, N. Merrill, K. Mulvaney, and T. Hill. Towards a macrosystems approach for successful coastal management. Oral presentation at Society of Wetland Scientists Annual Meeting, Puerto Rico, June 2017.
- 13 Hill, T.D. and S.C. Anisfeld. VulnToolkit: An R package for accessing public tide data. Poster presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA, February 2017.
- 14 Rietl, A., T.D. Hill, and B.J. Roberts. A multi-year record of biomass, primary production, and allometry of four dominant vegetation types in coastal Louisiana salt marshes. Oral presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA, February 2017.
- 15 Ceresnak, N.A.\*, A. Chelsky, T.D. Hill, and B.J. Roberts. Differential responses of soil greenhouse gas production and denitrification to salinity alterations along a wetland salinity gradient in Barataria Bay. Oral presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA, February 2017.
- 16 Stearns, R.B., S.E. Engelhart, A.C. Kemp, D.R. Corbett, and T.D. Hill. A High-Resolution Reconstruction of Late-Holocene Relative Sea Level in Rhode Island, USA. Poster presentation at Sea Level Rise: Minutes to Millenia conference, Muscat, Oman, November 2016.
- 17 Moore\*, N.R., C.R. Kanaskie\*, T.D. Hill, and A.J. Oczkowski. Belowground nitrogen uptake and allocation by *Spartina alterniflora* and *Distichlis spicata*. Oral presentation at New England Estuarine Research Society conference, October 2016.
- 18 Kanaskie\*, C.R., N.R. Moore\*, T.D. Hill, and A.J. Oczkowski. Aboveground nitrogen use efficiency and growth dynamics in *Spartina alterniflora* and *Distichlis spicata*. Oral presentation at New England Estuarine Research Society conference, October 2016.
- 19 Hill, T.D., S.C. Anisfeld, G. Benoit. Mercury pollution in coastal wetlands of Connecticut and New York. Oral presentation at New England Estuarine Research Society conference, April 2016.
- 20 Hill, T.D., B.J. Roberts, H. Sullivan, S.P. Setta, A. Chelsky, M.W. Rich, A. Hopple. A three-year record of *Spartina alterniflora* biomass, primary production, and allometry in coastal Louisiana. Oral presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL, February 2016.
- 21 Ceresnak\*, N.A., T.D. Hill, A. Chelsky, B.J. Roberts. Effects of salinity alterations on soil greenhouse gas production and denitrification along a wetland salinity gradient in Barataria Bay, Louisiana. Poster presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL, February 2016.
- 22 Chelsky, A., J.M. Marton, A.E. Bernhard, A.E. Giblin, S.P. Setta, T.D. Hill, B.J. Roberts. Spatial patterns in biogeochemical processes during peak growing season in oiled and un-oiled Louisiana salt marshes: A multi-year analysis. Poster presentation at Ocean Sciences Meeting, New Orleans, LA, February 2016.

- 23 Chelsky, A., J.M. Marton, A.E. Bernhard, A.E. Giblin, S.P. Setta, T.D. Hill, B.J. Roberts. Nitrification, denitrification, and greenhouse gas production during peak growing season in oiled and unoled Louisiana salt marshes. Oral presentation at Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL, February 2016.
- 24 Hill, T.D. and S.C. Anisfeld. Elevation and sediment accumulation: Sediment elevation tables. Panel presentation at Long Island Sound Tidal Wetland Loss Workshop, Port Jefferson, NY, October 2014.
- 25 Hill, T.D. and S.C. Anisfeld. Submergence: The role of nitrogen and other chemical stressors. Panel presentation at Long Island Sound Tidal Wetland Loss Workshop, Port Jefferson, NY, October 2014.
- 26 Hill, T.D. and S.C. Anisfeld. Sea level rise and sediment: Recent marsh accretion in Connecticut and New York. Oral presentation at New England Estuarine Research Society conference, Salem, MA, May 2014.
- 27 Haynesworth\*, A., T.D. Hill, and S.C. Anisfeld. Metal Pollution in Sediments of Greater New York Area Salt Marshes. Ecology and Evolutionary Biology thesis defense. New Haven, CT, May 2014.
- 28 Hill, T.D. Recent sea level rise and sediment accretion in Connecticut and New York. Oral presentation at Yale School of Forestry and Environmental Studies doctoral conference, New Haven, CT, October 2013.
- 29 Hill, T.D. and S.C. Anisfeld. Sediment flux between a Connecticut salt marsh and Long Island Sound. Poster presentation at New England Estuarine Research Society conference, Plymouth, MA, April 2012.
- 30 Hill, T.D. Causes and consequences of marsh loss in Long Island Sound. Poster presentation at EPA STAR conference, Washington, D.C., September 2011.
- 31 Hill, T.D. and S.C. Anisfeld. Fertilization effects on elevation change and belowground carbon balance in a Long Island Sound tidal marsh. Oral presentation at Connecticut Conference on Natural Resources, Storrs, CT, March 2011.
- 32 Hill, T.D. Salt marsh drowning in Long Island Sound: Causes and biogeochemical consequences. Oral presentation at Yale School of Forestry and Environmental Studies doctoral conference, New Haven, CT, September 2010.
- 33 Hill, T.D. and C. Polsky. Suburbanization and Drought: A Mixed Methods Vulnerability Assessment in Rainy Massachusetts. Oral presentation at the annual Water Resources Research Center Conference, Amherst, MA, March 2007.
- 34 Hill, T.D. and C. Polsky. Adaptation to Climate Variability in Central Massachusetts: A Focus on Structure and Agency. Oral presentation at the annual meeting of the Association of American Geographers, Chicago, IL, March 2006.

R, C++/Arduino, Python 3, bash, NetLogo, ArcGIS, ENVI, L<sup>A</sup>T<sub>E</sub>X

Lead developer for R packages: NitrogenUptake2016, coreCT, VulnToolkit

Service to internal communities

- |   |                |
|---|----------------|
| ▪ Research permit reviewer, US NPS  | 2018 – Present |
| ▪ Internal peer reviewer, US EPA  | 2016 – 2018    |
| ▪ Subject Matter Expert, Subcommittee on Ocean Science and Technology Blue Carbon Group | 2016           |
| ▪ SystemSketch technical reviewer, US EPA   | 2016           |
| ▪ Yale University Title IX Tribunal Member  | 2013 – 2014    |
| ▪ Fiat Lux Community Service Honor Society  | 2005 – 2006    |

#### Service to external communities

- Class Agent, Yale School of Forestry 2017 – Present
- Board Member, New England Estuarine Research Society 2016 – 2018
- Research Scientist, Coastal Waters Consortium 2015 – 2018
- Activity coordinator, Friends of Outer Island Citizen Science Day 2016
- Technical reviewer, Long Island Sound Study State of the Sound 2014 – 2015
- Keynote speaker, South Norwalk Fourth of July celebration 2011, 2013
- Environmental consultant (volunteer), South Norwalk, CT 2012 – 2013
- Peer reviewer
  - Ecology
  - Functional Ecology
  - Global Change Biology
  - Limnology and Oceanography
  - Geoderma
  - Wetlands
  - Journal of Environmental Management
  - Information Processing in Agriculture
  - Estuaries and Coasts
  - Marine Ecological Progress Series
  - Ecological Engineering
- Grant reviewer
  - NOAA Center for Sponsored Coastal Ocean Research Ecological Effects of Sea Level Rise Program

[CV compiled on 2019-08-04]