

ALYSSA B. NOVAK, Ph.D.

Research Assistant Professor

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EDUCATION

Ph.D., Natural Resources and Earth Sciences- Oceanography; University of New Hampshire

M.S., Environmental Science- GIS and Satellite Remote Sensing; University of Rhode Island

B.A., Biology; University of Virginia

CURRENT POSITIONS

2015- Research Assistant Professor, Earth and Environment, Boston University

2014- Adjunct Research Scientist, Provincetown Center for Coastal Studies

CURRENT APPOINTMENTS

2023- Board of Directors, SeagrassNet a global monitoring program

2019- Lead Scientist, International Union of Conservation of Nature (IUCN) Seagrass Group

2024- Representative for the Northeast Atlantic Cooperative Ecosystem Studies Unit for the National Park Service

COURSES TAUGHT

2022- Boston University Marine Semester, Tropical Seagrasses

2019- Boston University Marine Semester, Coastal Ecosystems

PUBLICATIONS

Co-first/last Author, **Students who I have advised or *committee mentor*

Trevathan-Tackett ST, et al. 2024. Climate Effects on Belowground Tea Litter Decomposition Depend on Ecosystem and Organic Matter Types in Global Wetlands. 2024. Environmental Science and Technology Journal. <https://doi.org/10.1021/acs.est.4c02116>.

Schaefer R, Colarusso P, Simpson JC, **Novak AB**, Nepf H. 2024. Proximity to inlet channel drives spatial variation in sediment organic carbon across a lagoonal seagrass meadow. Science of the Total Environment. 177022. <https://doi.org/10.1016/j.scitotenv.2024.177022>

Novak AB, Gerstenbacher CM, Lord KS, Rotjan R. 2024. Microplastic abundance and accumulation patterns in eelgrass (*Zostera marina* L.) meadows throughout coastal Massachusetts, USA. Environmental Monitoring and Assessment. 196: 775. <https://doi.org/10.1007/s10661-024-12943-1>.

Novak AB, Plaisted HK, Hughes ZJ, Mittermayr A, Molden E. 2023. Eelgrass (*Zostera marina* L.) populations are threatened by high sea-surface temperatures and impaired waters on Nantucket Island, USA. Marine Pollution. 197: 11568.

Houttuijn Bloemendaal LJ, FitzGerald DM, Hughes ZJ, **Novak AB**. 2023. Reevaluating the wave power-salt marsh retreat relationship. Scientific Reports 13 (1): 2884.

Lei J, Schaefer R, Colarusso P, **Novak AB**, Simpson JC, Masqué P, Nepf H. 2023. Spatial heterogeneity in sediment and carbon accretion rates within a seagrass meadow correlated with the hydrodynamic intensity. *Science of The Total Environment*. 854: 158685, ISSN 0048-9697.

Plaisted HK, Shields EC, **Novak AB**, Peck CP, Schenck F, Carr J, Duffy PA, Evans NT, Fox SE, Heck SM, Hudson R, Mattera T, Moore KA, Neikirk B, Parrish DB, Peterson BJ, Short FT, Tinoco A. 2022 Influence of Rising Water Temperature on the Temperate Seagrass Species Eelgrass (*Zostera marina* L.) in the Northeast USA. *Frontiers Marine Science*. 9:920699. doi: 10.3389/fmars.2022.920699.

FitzGerald DM, Hughes ZJ, Staro A, Hein CJ, Sakib M, Georgiou I, **AB Novak**. 2022. Following the Sand Grains. *Journal of Marine Science and Engineering*. 10, 631. <https://doi.org/10.3390/jmse10050631>.

Gerstenbacher C**, Finzi A, Rotjan R, **Novak AB***. 2022. A review of microplastic impacts on seagrasses, epiphytes, and associated sediment. *Environmental Pollution*. 119108.

Cronin-Golomb O***, Harringmeyer H, Weiser MW, Zhu X, Ghosh N, **Novak AB**, Forbrich I, Fichot CG. 2021. Modeling benthic solar exposure (UV and visible) in dynamic coastal systems to better inform seagrass habitat suitability. *Science of the Total Environment*. 151481.

Houttuijn Bloemendaal LJ, FitzGerald DM, Hughes ZJ, **Novak AB**, Phippen P. 2021. What controls marsh edge erosion? *Geomorphology*. 386:107745.

Moore GE, Burdick DM, Routhier MR, **Novak AB**, Payne AR. 2021. Effects of a large-scale, natural sediment deposition event on plant cover in a Massachusetts salt marsh. *PLoS One*. 16(1) e0245564. doi:10.1371/journal.pone.0245564. PMID: 33481899; PMCID: PMC7822311.

FitzGerald DM, Hein C, Connell JE, Hughes ZJ, Georgiou IY, **Novak AB**. 2021. Largest marsh in New England near a precipice. *Geomorphology*. 379 (25): 107625

FitzGerald DM, Ryerson O, Hughes ZJ, Black S, Georgiou IY, Hein C, **Novak AB**. 2020. Long-term Variability in Inorganic Sediment Contributions to the Great Marsh, Massachusetts. *Journal of Coastal Research*. 95 (SI): 490–494. doi: <https://doi.org/10.2112/SI95-095.1>

FitzGerald DM, Hughes ZJ, Georgiou IY, Black S, **Novak AB**. 2020. Enhanced, climate-driven sedimentation on salt marshes. *Geophysical Research Letters*. 47, e2019GL086737. <https://doi.org/10.1029/2019GL086737>

Novak AB, Pelletier MC, Colarusso P, Simpson J, Gutierrez MN, Aria-Ortiz A, Charpentier M, Masque P, Vella P. 2020. Factors influencing carbon stocks and accumulation rates in eelgrass meadows across New England. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-020-00754-9>

Plaisted HK, **Novak AB**, Weigel S, Klein AS, Short FT. 2019. Eelgrass genetic diversity influences resilience to stress associated with eutrophication. *Estuaries and Coasts*. 43,1425–1438. <https://doi.org/10.1007/s12237-019-00669-0>

Bendon M, Georgiou IY, **Novak AB**. 2019. Marsh Edge Erosion. In Fitzgerald, D.M. & Hughes, Z.J. (eds) *Salt Marshes. Marshes: Function, Dynamics, and Stresses*. Cambridge, UK: Cambridge University Press.

Novak AB, Hays C, Plaisted HK, Hughes AR. 2017. Limited effects of source population identity and number on seagrass transplant performance. *PeerJ* 5:e2972 <https://doi.org/10.7717/peerj.2972>

Short FT, Short CA, **Novak AB**. 2016. Seagrasses. In: G. Randy Milton and Crawford Prentice. *Wetlands of the World*.

Novak AB, Short FT. 2014. Submerged Aquatic Vegetation: Seagrasses. In: Wang, Y.Q. (ed) Encyclopedia of Natural Resources. Taylor and Francis, NY.

Novak AB, Short FT. 2012. Permanent and transient leaf reddening in the seagrass *Thalassia testudinum*. Bulletin of Marine Science. 88(2): 305–315.

Novak AB, Short FT. 2011. Leaf reddening in the seagrass *Thalassia testudinum* in relation to anthocyanins, seagrass physiology and morphology, and plant protection. Marine Bioology. 158: 1403-1416.

Novak AB, Short FT. 2011. The importance of UV-B light in the induction of leaf reddening and maintenance of photosynthesis in *Thalassia testudinum*. Experimental Marine Biology. 409: 136-142.

Novak AB, Short FT. 2010. Leaf reddening in seagrasses. Botanica Marina. 53: 93-97.

Novak AB, Hines E, Parr L, Kwan D, Than Tun M, Win H, Short FT. 2009. Revised ranges of seagrass species in the Myeik Archipelago, Myanmar. Aquatic Botany. 91: 250-252.

Hines E, Parr, L, Tan UMT, Kwan D, **Novak AB**. 2008. Interviews about dugongs and community conservation issues in the Myeik Archipelago of Myanmar. Sirenews: Newsletter of the IUCN/SSC Sirenia Specialist Group. 49.

Novak AB, Wang YQ. 2004. Effects of suburban sprawl on Rhode Island's forests: A Landsat view from 1972 to 1999. Northeastern Naturalist. 11(1): 67-74.

Bradley MP, Somers B, Castro K, **Novak AB**. 2003. Using GIS to analyze lobster migration in Rhode Island. Environmental Systems Research Institute map book: GIS – Serving our world, v18. ESRI, Redlands, CA.

TECHNICAL REPORTS

Novak AB, Plaisted HK. 2023. A Site Selection Model for Eelgrass Restoration and Enhancement for Pleasant Bay, MA Assuming Worst-Case Scenarios for Increases in SST by 2050. Report prepared for Pleasant Bay Alliance as part of the Pleasant Bay Climate Adaptation Action Plan. Chatham, MA.

Novak AB. 2022. Monitoring restored eelgrass to Nantucket Harbor, Nantucket MA. Report prepared for Nantucket Land Council. Nantucket, MA.

Novak AB, Torio D, Burdick D, Short FT. 2021. An updated site-selection model for eelgrass restoration in Great Bay Estuary, NH. Report prepared for Conservation Law Foundation, MA.

Novak AB. 2021. Restoring eelgrass to Nantucket Harbor, Nantucket MA. Report prepared for Nantucket Land Council. Nantucket, MA.

Novak AB. 2020. Health assessment for eelgrass in Madaket Harbor, Nantucket MA. Report prepared for Nantucket Land Council. Nantucket, MA.

Novak AB, Plaisted H. 2019. Health assessment for eelgrass in Nantucket Harbor, Nantucket MA. Report prepared for Nantucket Land Council. Nantucket, MA.

Novak AB, Phippen PD, Mittermayer, A. 2018. Using stable isotopes to assess ecological function in a recently restored eelgrass bed in Essex Bay (MA), Report prepared for Department of Marine Fisheries. Boston, MA.

Colarusso P, Simpson J, **Novak AB**, Ford K, DiBona P, Vella P, Dean J. 2017. Estimating carbon storage in eelgrass meadows in the Gulf of Maine. Report prepared U.S. EPA Climate Ready Estuaries Program.

Moore GE, Burdick D, Peter C, Phippen P, **Novak AB**. 2016. Great Marsh Phragmites Seed Viability and Sediment Addition Pilot Study. Report prepared for Department of Ecological Research. Boston, MA.

Novak AB, Phippen PD, Moore GE. 2015. Investigation of Salinity Patterns and Marsh Bank Erosion in Tidal Marsh Communities of the North Shore of Massachusetts: Marsh Bank Erosion, Report prepared for Department of Ecological Research. Boston, MA.

Novak AB. 2014. Creating the basis for successful restoration Part II: Test-transplanting multiple eelgrass donor populations and assessing the population structure of the invasive European Green Crab Great Marsh, Massachusetts. Report prepared for Massachusetts Office of Coastal Zone Management. Boston, MA.

Novak AB, Short FT. 2013. Creating the basis for successful restoration Part II: Test-transplanting multiple eelgrass donor populations in Plum Island Sound, Massachusetts to identify those most suitable for a large-scale restoration. Report prepared for Massachusetts Office of Coastal Zone Management. Boston, MA.

Novak AB, Short FT. 2012. Creating the basis for successful restoration Part I: An eelgrass habitat suitability model in GIS for Plum Island Sound, Massachusetts. Report prepared for Massachusetts Office of Coastal Zone Management. Boston, MA.

Short FT, **Novak AB**. 2006. Application of the preliminary transplant suitability index (PTSI) model for eelgrass, *Zostera marina*, in Annisquam River, Gloucester Harbor, Massachusetts. Report prepared for Massachusetts Office of Coastal Zone Management. Boston, MA.

PRESENTATIONS

* DENOTES AWARD; ** DENOTES INVITED PRESENTATION

*****Novak AB**. 2024. Reducing climate vulnerability of eelgrass meadows across multiple parks from Maine to North Carolina through the application of assisted gene flow approaches. Cape Cod National Seashore. July 12, Wellfleet, MA.

*****Novak AB**. 2024. Eelgrass (*Zostera marina* L.) populations are threatened by high sea-surface temperatures and impaired waters on Nantucket Island, USA. Zosterapalooza. March 17, Boston, MA.

Plaisted HK, **Novak AB**, Carr J, Nagel J, Rasmussen J, Neckles H. 2023. Predictions of Eelgrass Vulnerability to Warmer Temperature Regimes in Pleasant Bay, Cape Cod, MA. Coastal Estuarine Research Federation Conference. November 12-16, Portland, OR.

****Novak AB**. 2023. Eelgrass populations in Nantucket are threatened by rising sea-surface temperatures and eutrophic waters. State of the Harbor Address. July 18, Nantucket, MA.

****Novak AB**. 2023. Best Practices for Restoring Eelgrass. Water Keeper's Alliance National Conference. May 15, Hyannis, MA

****Novak AB**. 2022. Restoring eelgrass to the Great Marsh. New England BioLabs. December 15, Ipswich, MA.

****Novak AB.** 2022. Restoring eelgrass to a eutrophic and thermally stressed system. New England Estuarine Research Federation. May 5-7, Salem, MA.

****Novak AB.** 2021. Assessing and restoring eelgrass to Nantucket, MA. Nantucket Biodiversity Initiative. November 5-7, Nantucket, MA.

Novak AB. 2020. An innovative approach to restoring eelgrass in Great Marsh, Massachusetts. Restore America's Estuaries Conference. September 29-October 1, Providence, RI.

Novak AB, Pelletier M, Colarusso P, Simpson J, Gutierrez N, Ortiz AA, Masque P. 2019. Factors affecting carbon stocks and accumulation rates in eelgrass (*Zostera marina* L.) meadows across New England, USA. Coastal Estuarine Research Federation Conference. November 5-9, Mobile, AL.

Plaisted H, **Novak AB,** Weigel S, Klein A, Short FT. 2019. Eelgrass genetic diversity influences resilience to stressors associated with eutrophication. Coastal Estuarine Research Federation Conference. November 5-9, Mobile, AL.

Aruja V, **Novak AB.** 2019. The influence of temperature on green crab population dynamics in Great Marsh, MA. New England Estuarine Research Society. April 25, York ME.

**** Novak AB.** 2019. The environmental significance of leaf reddening in seagrasses. New England Estuarine Research Society. April 25, York ME.

Ryerson O, FitzGerald DM, Hughes Z, Black S, Georgio I, Hein C, **Novak A.** 2019. Temporal and spatial variability in inorganic sediment contributions to Great Marsh, MA. Geological Society of America. Southeastern Section 68th Southeastern Annual Section Meeting. March 28, Charleston, SC.

Novak AB, Pelletier M, Colarusso P, Simpson J, Gutierrez N, Ortiz AA, Masque P. 2018. Factors affecting carbon storage capacity of eelgrass (*Zostera marina* L.) meadows in New England. Zosterapalooza. March 18, Boston, MA.

Torio D, Anderson N, **Novak AB,** Short FT. 2019. Using community-based eelgrass monitoring and satellite data to identify threats to eelgrass along the James Bay Coast. Yaayimutitaa Eelgrass Symposium. January 28-31, Cree Nation, Chisasibi, Quebec, Canada.

Pelletier M, Colarusso P, **Novak AB,** Simpson J, Gutierrez N, Ortiz AA, Masque P. 2017. Quantification of carbon accumulation in eight New England seagrass meadows. Coastal Estuarine Research Federation Conference. November 5-9, Providence, RI.

Plaisted H, Shields E, Carr J, Evans NT, Fox S, Heck S, Hudson R, Moore K, Neckles H, Neikirk B, **Novak AB,** Parrish D, Peterson B, Tinoco A, Short F. 2017. Seagrass responses to environmental variables from Maryland to New Hampshire show impacts of ocean warming. Coastal Estuarine Research Federation Conference. November 5-9, Providence, RI.

Novak AB, Pelletier M, Colarusso P, Simpson J, Gutierrez N, Ortiz AA, Masque P. 2017. Factors affecting carbon storage capacity of eelgrass (*Zostera marina* L.) meadows in New England. Coastal Estuarine Research Federation Conference. November 5-9, Providence, RI.

***Novak AB.** 2017. Green grabs and the Great Marsh. Ipswich Environment Symposium. October 21, Ipswich, MA.

Novak AB. 2017. Strategies for a successful reintroduction of eelgrass to Great Marsh. National Adaptation Forum. May 9-11, Saint Paul, Minnesota.

Martin ET, Quirk EE, Broderhausen EC, Roderhausen EC, Chiang K, Fitzgerald DM, **Novak AB**, Farron S. 2017. The effect of biomass on marsh edge erosion in relation to rising sea levels. Geological Society of America. Joint 52nd Northeastern Annual Section/51st North-Central Annual Section Meeting. March 20, Pittsburg, PA.

Williams J, Fitzgerald D, Farron S, **Novak AB**. 2017. The effects of edge erosion on the long-term stability of the Great Marsh. The effect of biomass on marsh edge erosion in relation to rising sea levels. Geological Society of America. Joint 52nd Northeastern Annual Section/51st North-Central Annual Section Meeting. March 20, Pittsburg, PA.

Novak AB, Mogensen H, Phippen P, Mittermayr A. 2017. Restoring Eelgrass to Great Marsh, MA. EPA- Zosterapalooza, March 25, Boston, MA.

Colarusso P, Pelletier M, **Novak AB**, Simpson J, Gutierrez MN, Ortiz AA, Masque P, Vella P. 2017. Factors affecting carbon accumulation in New England eelgrass meadows. New England Estuarine Research Federation, March 16 – 18, University of Connecticut, Avery Point Campus Groton, CT.

****Novak AB**. 2016. Seagrass Ecology and Conservation. Immersed at Artlerly Gallery. November 17, Boston, MA.

Novak AB, Colarusso P, DiBona P, Ford K., Simpson J, Vella P. 2016. Estimating carbon storage capacity in Massachusetts eelgrass meadows. International Seagrass Biology Workshop. October 16-21, Wales, UK.

****Novak AB**. 2016. Seagrass Ecology and Conservation. Biodiversity for a Livable Climate at Harvard University. April 30, Cambridge, MA.

Mogensen H., **Novak AB**. 2016. Marsh Invaders: Abundance and population characteristics of the European Green Crab (*Carcinus maenas*) in Great Marsh, MA. New England Estuarine Research Society. April 14-16, York, Maine.

Colarusso P, DiBona P, Ford K., **Novak AB**, Simpson J, Vella P. 2015. Estimating carbon storage in eelgrass meadows in the Gulf of Maine. Coastal Estuarine Research Federation Conference. November 1-5, Portland, OR.

**** Novak AB**, Bayley HK. 2014. Building resilient eelgrass populations in a globally changing environment. Cape Cod National Seashore Symposium. August 29, Eastham, MA.

****Novak AB**. 2012. Saving Keji Seaside's Seagrass: Eelgrass restoration and planting techniques in the presence of a hyper-abundant green crab population. Parks Canada. June 28-29, Port Mouton, NS.

****Novak AB**. 2011. Marine bio-optics and the collection of light data. National Park Service Water Quality Workshop. March 3, Truro, MA.

***Novak AB**. 2010. Understanding leaf reddening in *Thalassia testudinum*. World Seagrass Conference. November 20-26, Phuket, Thailand.

***Novak AB**, Short FT. 2010. Why are some seagrasses turning red? New England Estuarine Research Society Conference. October 28-30, Provincetown, MA.

Novak AB. 2010. Leaf reddening in the seagrass *Thalassia testudinum* in relation to anthocyanins, seagrass physiology and morphology, and plant protection. New England Estuarine Research Society Conference. May 12-15, Saint Andrews By-the-Sea, New Brunswick, Canada.

Novak AB. 2010. UVB promotes leaf reddening and photosynthesis in the seagrass *Thalassia testudinum*. University of New Hampshire Graduate Research Conference. April 12-13, University of New Hampshire, Durham, NH.

****Novak AB.** 2010. Leaf reddening in *Thalassia testudinum*. Harbor Branch Oceanographic Institute. February 18, Fort Pierce, FL.

Novak AB, Short FT. 2009. UVB induced leaf reddening in *Thalassia testudinum*. Coastal Estuarine Research Federation Conference. November 1-5, Portland, OR.

Novak AB, FT Short. 2007. Leaf reddening in seagrasses: A result of stratospheric ozone depletion and global climate change? Estuarine Research Federation Conference. November 4-8, Providence, RI.

Kuhn A, Copeland J, **Novak AB**, Brennan M. 2004. A GIS-based multi-scale approach to habitat model development for the Common Loon, *Gavia immer*, in New Hampshire, USA. International Association for Landscape Ecology Annual Conference. March 28-April 2, Las Vegas, NV.

Novak AB, Wang YQ. 2003. Assessing Development Patterns, Formative Factors, and Ecological Consequences of Landscape Change in Rhode Island. American Society of Photogrammetric Engineering and Remote Sensing Annual Conference. May 3–9, Anchorage, AK.

Bradley M, Castro K., **Novak AB**, Somers B. 2003. Using GIS to Analyze Lobster Migration and Movement in Rhode Island. Rhode Island Natural History Survey Conference. March 7, Cranston, RI.

Novak AB, Wang YQ. 2002. Changes in Land Use and Land Cover in Rhode Island and the Impact on Forest Ecosystems. New England GIS Conference. May 15-16, Boxborough, MA.

Novak AB, Wang YQ. 2002. Effects of Urbanization on Rhode Island's Forests: Changes in Land Cover Between 1985 and Present. Rhode Island Natural History Survey Conference. March 1, Providence, RI.