CURRICULUM VITAE

THOMAS A. FRANKOVICH

Birthdate: 22 May 1968, Livingston, New Jersey

Professional address: Florida Bay Interagency Science Center
98630 Overseas Highway
Key Largo, FL 33037

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Education

B.S., Cook College, Rutgers University. May 1990.

Major: Biology.
Minor: Chemistry.
Awards and Honors: Garden State Distinguished Scholars Scholarship
Graduated with Honors.

M.S., Department of Environmental Sciences, University of Virginia, January, 1996.

Thesis title: Epiphyte production on the seagrass *Thalassia testudinum*.

Ph.D., Department of Environmental Sciences, University of Virginia, June 2006.

Dissertation title: Epiphyte light transmission relationships and biological and physico-chemical influences on seagrass epiphyte standing stock and community composition.

Awards and Honors: George Barley Graduate Fellowship 1997-2003

Phycology program, Friday Harbor Laboratories, University of Washington, June - July 1998.

Professional certifications

United States Coast Guard OUPV Captain's license - 1995, renewed 2000, 2005, 2010.
SCUBA certified, Scuba Schools International (SSI) - 1991
CPR, First Aid, Oxygen provider

Research Experience

1988	Research technician, M & T Chemicals, Rahway, New Jersey. Synthesized polyvinyl chloride (PVC) compounds and organo-tin compounds and prepared products for analysis.
1990-1991	Graduate research assistant, University of Virginia. Performed laboratory analysis on elemental composition of seagrasses of Florida Bay.
1991-1992	Graduate research assistant, University of Virginia. Developed analytical techniques for the accurate measurement of epiphytic calcium carbonate standing stocks.
1992	Water quality technician, National Undersea Research Center, Key Largo, Florida. Collected weekly seawater samples and performed low-level nutrient determinations for orthophosphate, ammonium, and nitrite + nitrate.
1993	Research assistant, University of Virginia. Monitoring of seagrass parameters (biomass, productivity, PAR, etc) in experimental plots in order to determine the response of seagrass communities to a chronic reduction in the amount of photosynthetically active radiation.
1993-1997	Senior biologist, Southeast Environmental Research Program, Florida International University, Miami, Florida. Responsible for collection, analysis, and synthesis of monthly water quality surveys encompassing Biscayne Bay, Florida Bay, Florida Keys, the southwest Florida coast, and the Ten Thousand Islands.
1998	Graduate teaching assistant, University of Virginia. Taught introductory geology lab to undergraduate students.
1999 - 2005	Graduate research fellow, George Barley Fellowship, University of Virginia. Development of methodology to measure epiphytic light attenuation and characterization of epiphytic diatom communities in Florida Bay.
2002-2005	Research biologist, Southeast Environmental Research Program, Florida International University, Miami, Florida. Responsible for long-term experiments manipulating nitrogen and phosphorus in seagrass beds in Florida Bay.
2006 - present	Research scientist, Southeast Environmental Research Center, Florida International University, Miami, Florida. Investigating benthic vegetation dynamics and water quality in mangrove lakes.

Grant Activities

2011 Submerged Aquatic Vegetation and Water Quality Monitoring and Nutrient Source Pools in the Mangrove Lakes. Funded by the South Florida Natural Resources Center and South Florida/Caribbean Cooperative Ecosystem Studies Unit, National Park Service, Department of the Interior. Project duration: January 1 2011 – December 31 1014. Total Funding $319,000. Principal Investigators Thomas A Frankovich and James Fourqurean.

Publications - Refereed Journals

Frankovich, T.A., and J.C. Zieman. 1994. Total epiphyte and epiphytic carbonate production on *Thalassia testudinum* across Florida Bay. Bulletin of Marine Science 54: 679-695.

Frankovich, T.A., and J.C. Zieman. 1995. A comparison of methods for the accurate measurement of epiphytic carbonate. Estuaries 18: 279-284.

Frankovich, T.A., and J.W. Fourqurean. 1997. Seagrass epiphyte loads along a nutrient availability gradient, Florida Bay, Fl, USA. Marine Ecology Progress Series 159: 37-50.

Frankovich, T.A., and R.D. Jones. 1998. A rapid, precise, and sensitive method for the determination of total nitrogen in natural waters. Marine Chemistry 60: 227-234.

Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. 1999. Seagrass dieoff in Florida Bay (USA): Long-term trends in abundance and growth of *Thalassia testudinum*. Estuaries 22: 460-470.

Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. 2004. Reply to Lapointe, B.E. and P.J. Barile: "A technical note and comment on the article by Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich entitled "Seagrass dieoff in Florida Bay (USA): Long-term trends in abundance and growth of *Thalassia testudinum*. Estuaries 26: 1548-1555.

Borum, J., O. Pedersen, T.M. Greve, T.A. Frankovich, J.C. Zieman, J.W. Fourqurean and C.J. Madden. 2005. The potential role of plant oxygen and sulfide dynamics in die-off events of the tropical seagrass,*Thalassia testudinum*. Journal of Ecology 93: 148-158.

Frankovich, T.A., and J.C. Zieman. 2005. A temporal investigation of grazer dynamics, nutrients, seagrass leaf productivity, and epiphyte standing stock. Estuaries.28: 39-50.

Armitage, A.R., T.A. Frankovich, K.L. Heck, and J.W. Fourqurean. 2005. Experimental nutrient enrichment causes complex changes in seagrass, microalgae, and macroalgae community structure in Florida Bay. Estuaries 28: 422-434.

Frankovich, T.A., and J.C. Zieman. 2005. Epiphyte light transmission relationships on the seagrass *Thalassia testudinum* König. Aquatic Botany 83: 14-30.

Frankovich, T.A., E. E. Gaiser, J.C. Zieman, and A. Wachnicka. 2006. Spatial and temporal distributions of epiphytic diatoms growing on *Thalassia testudinum* Banks ex König: relationships to water quality. Hydrobiologia 569: 259-271.

Armitage, A.R., T.A. Frankovich, and J.W. Fourqurean. 2006. Variable responses within epiphytic and benthic microalgal communities to nutrient enrichment. Hydrobiologia 569: 423-435.

Peterson, B.J., T.A. Frankovich, and J.C. Zieman. 2007. Response of seagrass epiphyte loading to field manipulations of fertilization, gastropod grazing, and leaf turnover rates. Journal of Experimental Marine Biology and Ecology 349: 61-72.

Frankovich, T.A., A.R. Armitage, J.W. Fourqurean, A.H. Wachnicka, and E.E. Gaiser. 2009. Nutrient effects on seagrass epiphyte community structure in Florida Bay. Journal of Phycology 45: 1010-1020.

Baggett. L.P., K. L. Heck, T. A. Frankovich, A.R. Armitage and J.W. Fourqurean. 2010. Nutrient enrichment, grazer identity and their effects on epiphytic algal assemblages: field experiments in sub-tropical turtlegrass (*Thalassia testudinum*). meadows. Marine Ecology Progress Series 406: 33-45.

Stacy, B.A., T.A. Frankovich, E. Greiner, R. Allemen, L.H. Herbst, A. Bolten, P. Klein, J.B. Dame. A. McIntosh, J. Parsons, and E.R. Jacobsen. 2010. Detection of Spirorchid trematodes by polymerase chain reaction: preliminary identification of an intermediate host of *Learedius learedi*. Journal of Parasitology 96: 752-757.

Wachnicka, A., E. Gaiser, T. Frankovich, L. Collins, and J. Boyer. 2010. Developing Diatom-Based Inferences of Environmental Change in Florida Bay and Adjacent Coastal Wetlands of South Florida. Estuaries and Coasts 33: 1080-1098.

Frankovich, T.A., J.W. Fourqurean, and D. Morrison. 2011. Benthic macrophyte distribution and abundance in estuarine mangrove lakes: relationships to water quality. Estuaries and Coasts 34: 20-31.

Armitage, A.R., T.A. Frankovich, and J.W. Fourqurean. 2011. Long term effects of adding nutrients to an oligotrophic coastal environment. Ecosystems 14: 430-444.

Machlis, G., Frankovich, T.A., Alcolado, P.M., Garcia-Machado, E., Hernández-Zanuy, A.C., Hueter, R.E., Knowlton, N., . Perera, E., and Tunnell, J.W. 2012. US-Cuba Scientific Collaboration: Emerging Issues and Opportunities in Marine and Related Environmental Sciences. *Oceanography* 25:227-231.

Baggett. L.P., K. L. Heck, T. A. Frankovich, A.R. Armitage and J.W. Fourqurean. In press. Stoichiometry, growth, and fecundity responses to nutrient enrichment by 1 invertebrate grazers in sub-tropical turtlegrass (*Thalassia testudinum*) meadows. Submitted to Marine Biology.

Frankovich, T.A., J.G. Barr, D. Morrison, and J.W. Fourqurean. In press. Differing temporal patterns of *Chara hornemannii* cover correlate to alternate regimes of phytoplankton and submerged aquatic-vegetation dominance. Submitted to Marine and Freshwater Research.

Other publications

Zieman, J.C., P.R. Carlson, K.H. Dunton, M.J. Durako, J.W. Fourqurean, K.L. Heck, T.A. Frankovich, K.S. Lee, C.A. Moncrieff, J.M. Zande. 1996. The effects of chronic light reduction on *Thalassia testudinum* at stations across the Gulf of Mexico. Final report to the EPA Environmental Research Laboratory - Gulf Breeze.

Frankovich, T.A. and J.W. Fourqurean. 2010. Submerged aquatic vegetation and physic-chemical monitoring in the Florida Bay mangrove zone for CERP assessments and targets refinement. Final project report to Everglades National Park.

Frankovich, T.A. 2012. Some animals feed on seagrasses., Seagrass meadows provide important habitat and support complex food webs., Epiphytes are vital and often overlooked components of seagrass communities. Pages 267-269, in W. L. Kruczynski and P. J. Fletcher (Eds.) Tropical Connections: South Florida's Marine Environment. IAN Press, University of Maryland Center for Environmental science, Cambridge, Maryland. 492 pp.

Reviewing experience

Journals - Aquatic Biology, Aquatic Botany**,** Aquatic Ecology, Bulletin of Marine Science, Chinese Journal of Oceanology and Limnology, Eos, Estuaries and Coasts, Hydrobiologia, Marine Ecology, Marine Ecology Progress Series, Phillipine Journal of Science, Polish Journal of Environmental Studies, Wetlands, and Wetlands Ecology and Management

Grant agencies - Mississippi - Alabama Sea Grant, Texas Sea Grant

Oral Presentations

1992 Frankovich, T.A., and J.C. Zieman. Biomass and calcium carbonate production by epiphytes of *Thalassia testudinum* across Florida Bay. Symposium on Florida Keys Regional Ecosystem, Miami, FL, November 16-20.

1993 Frankovich, T.A., and J.C. Zieman. Distribution of epiphyte loads on *Thalassia testudinum* across Florida Bay. Estuarine Research Federation Conference, Hilton Head Island SC, November 14-18.

1994 Frankovich, T.A., J.W. Fourqurean, and R.D. Jones. Epiphyte loads and seagrass C:N:P ratios as indicators of nutrient availability. American Society of Limnology and Oceanography - Phycological Society of America joint meeting, Miami, FL, June 12-16.

1994 Frankovich, T.A., J.C. Zieman, J.W. Fourqurean, and R.D. Jones. Factors affecting the distribution of epiphyte loads on *Thalassia testudinum* across Florida Bay. Coastal Wetlands Ecology Management Symposium, Key Largo, FL, December 6-9.

1995 Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. Spatial and temporal variations in seagrass biomass and productivity across Florida Bay. Florida Bay Science Conference, Gainesville, FL, October 17-18.

1995 Zieman, J.C., T.A. Frankovich, J.W. Fourqurean, and M.B. Robblee. The effects of chronic light reduction on seagrasses in Florida Bay. Estuarine Research Federation meeting, Corpus Christi, TX, November 12-16.

1996 Fourqurean, J.W., M.J. Durako, T.A. Frankovich, and J.C. Zieman. What Florida Bay seagrasses indicate about nutrient availability. Workshop on Florida Bay Nutrients, Key Largo, FL, July 1-2.

1996 Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. Seagrass die-off in Florida Bay: long-term trends in abundance and growth of *Thalassia testudinum* and the role of hypersalinity. 1996 Florida Bay Science Conference, Key Largo, FL, December 10-12.

1996 Fourqurean, J.W., and T.A. Frankovich. Seagrass elemental content and epiphyte loads along the nutrient availability gradient in Florida Bay. 1996 Florida Bay Science Conference, Key Largo, FL, December 10-12.

1999 Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. The Florida Bay seagrass dieoff 1989-1999: Decadal scale changes in seagrasses and driving variables. Estuarine Research Federation Conference, New Orleans, LA., September 25-30.

1999 Frankovich, T.A. The origins of carbonate muds: current and historical knowledge and the role of seagrass epiphytes. Geology Department Seminar Series, Florida International University Miami, FL, October 29.

2000 Frankovich, T.A. An introduction to seagrass epiphyte communities in Florida Bay: Species composition, distribution, and effects on seagrass host. Botany Seminar Series, Biology Department, Florida International University, Miami, FL, October 30.

2001 Pedersen, O., J. Borum, T. Greve, J. Zieman, T. Frankovich, and J. Fourqurean. Does meristematic anoxia cause episodic mass mortality among seagrasses? 7th Conference of the International Society for Plant Anaerobiosis, Nijmegen, Denmark, June 4-8.

2002 Frankovich, T.A. Grazers, nutrients and seagrass leaf turnover rates as controls on epiphyte loading. *Ponente en los Jueves de la Ciencia Seminarios 2002. Centro de Ecologia, Pesquerias y Oceanografia del Golfo de Mexico, EPOMEX y la Facultad de Ciencias Quimico Biologicas, La Universidad Autonoma de Campeche*, Campeche, Mexico, July 4.

2002 Frankovich, T.A., B.J. Peterson, J.C. Zieman, and J.W. Fourqurean. Response of seagrass

epiphyte loading to fertilization and gastropod grazer manipulations. International Seagrass Biology Workshop 5, Ensenada, Mexico, October 7-12

2003 Frankovich, T.A., and J.C. Zieman. Epiphyte loading rates and epiphytic light attenuation characteristics along the productivity gradient in Florida Bay. All Scientists Meeting - Florida Coastal Everglades Long-term Ecological Research, Miami, FL, January 5-6.

2003 Frankovich, T.A., A. Willman, J.W. Fourqurean, and K.L. Heck. Nitrogen versus phosphorus limitation of benthic primary production and the role of epiphyte grazers in Florida Bay. Joint conference on the science and restoration of the greater Everglades and Florida Bay ecosystem, Palm Harbor, FL, April 13-18.

2003 Pedersen, O., J. Borum, T.M. Greve, J.C. Zieman, T.A. Frankovich, and J.W. Fourqurean. Meristem anoxia and sulfide intrusion: a mechanism for *Thalassia testudinum* short shoot mortality in Florida Bay. Joint conference on the science and restoration of the greater Everglades and Florida Bay ecosystem, Palm Harbor, FL, April 13-18.

2003 Frankovich, T.A. and J.C. Zieman. Epiphytic diatom species assemblages: relationships to estuarine water quality. 17th Biennial Conference of the Estuarine Research Federation, Seattle, WA, September 14-18.

2003 Zieman, J.C., J.W. Fourqurean, and T.A. Frankovich. Recent and historical changes in seagrass beds in southern Florida. 17th Biennial Conference of the Estuarine Research Federation, Seattle, WA, September 14-18.

2003 Frankovich, T.A., J.C. Zieman, A. Wachnick, and E.E.Gaiser. Epiphytic diatom species assemblages in Florida Bay. 17th North American Diatom Symposium, Islamorada, FL, October 20-25.

2003 Frankovich, T.A. Seagrasses in Florida Bay and the Florida Keys. Florida Keys National Marine Sanctuary Teacher Workshop, Key Largo, FL, November 15.

2004 Armitage, A.R., T.A. Frankovich,and J.W. Fourqurean. Seagrass community structure response to phosphorus enrichment varies along a gradient of nutrient influence in Florida Bay. 33rd Annual Benthic Ecology Meeting, Mobile, AL, March 25-28.

2004 Frankovich, T.A. and J.C. Zieman. Epiphyte light transmission relationships on the seagrass *Thalassia testudinum* Konig. Seagrass 2004 and the International Seagrass Biology Workshop (ISBW6), Townsville, Australia, September 24 – October 24.

2005 Frankovich, T.A., E.E. Gaiser, A. Wachnicka, and J.C. Zieman. Distribution of epiphytic diatoms in a sub-tropical estuary. 2005 American Geophysical Union Joint Assembly, New Orleans, LA, May 23-27.

2005 Baggett, L.P., K.L. Heck, A. R. Armitage, T.A. Frankovich, and J.W. Fourqurean. The effects of nutrient enrichment on the stoichiometry of epiphyte grazers associated with the

seagrass *Thalassia testudinum* in Florida Bay. 18th Biennial Conference of the Estuarine Research Federation, Norfolk, VA, October 16-21.

2005 Frankovich, T.A., E.E. Gaiser, A.R. Armitage, and J.W. Fourqurean. Effects of nitrogen and phosphorus fertilization on epiphytic diatom communities. 18th Biennial Conference of the Estuarine Research Federation, Norfolk, VA, October 16-21.

2007 Frankovich, T.A., A.R. Armitage, J.W. Fourqurean, A. Wachnicka, and E. E. Gaiser. P enrichment of seagrass meadows causes changes in epiphyte community structure at different taxonomic levels. 19th Biennial Conference of the Estuarine Research Federation, Providence, RI, November 4-8 2007.

2007 Armitage, A.R., T.A. Frankovich, and J.W. Fourqurean. Long-term shifts in seagrass community structure follow experimental nutrient enrichment in Florida Bay. 19th Biennial Conference of the Estuarine Research Federation, Providence, RI, November 4-8.

2008 Armitage, A.R., T.A. Frankovich, and J.W. Fourqurean. Long-term shifts in seagrass community structure follow experimental nutrient enrichment in Florida Bay. Cooperative Ecosystem Studies Units Network 5th National Meeting.

2008 Frankovich, T. A., J.W. Fourqurean, and D. Morrison. Spatio-temporal dynamics of SAV abundance and water quality in the Mangrove Lakes region of Florida Bay. Greater Everglades Ecosystem Restoration Conference, Naples, FL, July 28 – August 1.

2009 Frankovich, T.A., D. Morrison, J.W. Fourqurean, and J. Barr. Spatio-temporal dynamics of SAV Abundance in a seasonally arid estuary: relationships to salinity, phosphorus, and water clarity. Coastal and Estuarine Research Conference, Portland, OR, November 1-5.

2010 Frankovich, T.A., D. Morrison, J.W. Fourqurean, J. Barr, and K. Cunniff. Seasonal patterns in *Chara* and *Halodule* communities in the mangrove lakes and estuaries of the coastal Everglades: relationships to environmental variables. Greater Everglades Ecosystem Restoration Conference, Naples, FL, July 12-16.

2011 Frankovich, T., J. Barr, D. Morrison, and J.W. Fourqurean. Differential importance of water quality parameters and temporal patterns of submerged aquatic vegetation (SAV) in adjacent sub-estuaries distinguished by alternative regimes of phytoplankton and SAV dominance. Coastal and Estuarine Research Conference, Daytona Beach, FL, November 6-10.

2012 Frankovich, T.A. Florida Bay: An Introduction and the Seagrass Dieoff Story. Florida Bay Day, Coral Shores High School, Key Largo, FL, May 17.

Poster Presentations

1999 Frankovich, T.A., M.B. Weatherly, and J.C. Zieman. Demographic growth characteristics of *Thalassia testudinum*: Leaf morphology and productivity. Estuarine Research Federation Conference, New Orleans, LA, September 25-30.

2001 Frankovich, T.A. and J.C. Zieman. Epiphytic light attenuation on *Thalassia testudinum* in Florida Bay. 2001 Florida Bay Science Conference, Key Largo, FL, April 23-26.

2002 Frankovich, T.A. and J.C. Zieman. Epiphyte accumulation rates and epiphytic light attenuation characteristics along a productivity gradient in Florida Bay. All Scientists Meeting - Florida Coastal Everglades Long-term Ecological Research, Miami, FL, February 8-9.

2003 Armitage, A.R., T.A. Frankovich, and J.W. Fourqurean. N vs. P limitation of benthic primary production in Florida Bay. LTER All Scientists Meeting, Seattle, WA, September 18-21.

2004 Frankovich, T.A., J.C. Zieman, A.R. Armitage, and J.W. Fourqurean. Development of epiphyte light transmission equations for subtropical seagrass epiphyte assemblages. 33rd Annual Benthic Ecology Meeting, Mobile, AL, March 25-28.

2005 Baggett, L.P., K.L. Heck, A.R. Armitage, T.A. Frankovich, and J.W. Fourqurean. The effects of nutrient enrichment on the seagrass *Thalassia testudinum* and its associated epiphyte grazers in Florida Bay, FL, USA. 34th Annual Benthic Ecology Meeting, Williamsburg, VA, March.

2006 Gaiser, E., D. Iwaniec and T. Frankovich. Benthic algal productivity in the Florida Everglades. National Science Foundation Long Term Ecological Research Program All Scientists Meeting, Estes Park, CO, September 20-22.

2010 Frankovich, T.A., D. Morrison, J.W. Fourqurean, J.G. Barr, and K. Cunniff. Seasonal patterns in benthic macrophytes and water quality parameters in the Mangrove Lakes region of Florida Bay. Linking Science to Management, A Conference & Workshop on the Florida Keys Marine Ecosystem, Duck Key, FL, October 19-22.

2011 Kelly, S. P., D.T. Rudnick, C.J. Madden, T.A. Frankovich, and V. McGee-Absten. Comparative study of saline lake dynamics and restoration responses in the Everglades-Florida Bay ecotone. Coastal and Estuarine Research Conference, Daytona Beach, FL, November 6-10.

Other

Invited participant to U.S. and Cuba science collaboration meetings sponsored by the American Association for the Advancement of Science and the Cuban Academy of Science. Discussions in marine, atmospheric, and medical sciences. Havana, Cuba, December 12-16, 2011.

Described new diatom species - *Cocconeis barleyi* Frankovich et DeStefano, In Mario De Stefano and Oscar Romero (authors) "A survey of alveolate species of the diatom genus *Cocconeis* (Ehr.) with remarks on the new section *Alveolatae*" Bibliotheca Diatomologica Band 52, 2005.

Cover photograph - Southeastern Naturalist, volume 2, number 4, 2003 "*Rhizophora mangle* flowers"