

## CURRICULUM VITAE

### AMANDA C. SPIVAK

Marine Biogeochemist

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### EDUCATION.

Ph.D.: Marine Science. 2008. College of William & Mary, Williamsburg, VA.

Dissertation: *Bottom-up and Top-down Controls on Sedimentary Ecosystem Functioning in a Seagrass Habitat* (Advisors: Elizabeth A. Canuel and J. Emmett Duffy)

A.B.: Biology, Environmental Science concentration, with honors. Minor in English. Magna Cum Laude. 2001. Bryn Mawr College, Bryn Mawr, PA.

### PROFESSIONAL EXPERIENCE.

Assistant Scientist. Woods Hole Oceanographic Institution, Department of Marine Chemistry and Geochemistry, Woods Hole, MA. 2011 – Present.

Postdoctoral Fellow. U.S. Environmental Protection Agency, Gulf Ecology Division, Ecosystem Assessment Branch, Gulf Breeze, FL. 2010 – 2011.

Postdoctoral Fellow. Miami University, Zoology Department, Oxford, OH. Advisor: Michael J. Vanni. 2008 – 2009.

Graduate Assistant. College of William & Mary, Virginia Institute of Marine Science, Physical Sciences Department, Gloucester Point, VA. 2002 – 2008.

Intern. Smithsonian Environmental Research Center, Marine Invasions Research Lab. Edgewater, MD. Supervisor: Gregory M. Ruiz. 12/2001 – 5/2002.

Intern. Dauphin Island Sea Lab, Marine Ecology Lab, Dauphin Island, AL. Supervisor: Kenneth L. Heck, Jr.. 8/2001 – 12/2001.

Intern. University of Miami, Rosenstiel School of Marine and Atmospheric Science, Miami, FL. Supervisor: Larry E. Brand. 6/2001 – 8/2001.

NSF REU Intern. University of Maine, Darling Marine Center, Walpole, ME. Supervisor: Lawrence Mayer. 6/2000 – 8/2000.

Student. Marine Biological Laboratory, Semester in Environmental Science, Woods Hole, MA.

Independent project supervisor: Charles Hopkinson. 9/1999 – 12/1999

Student. Sea Education Association (C-164), Woods Hole, MA. 6/1999 – 8/1999.

### AWARDS.

- ASLO Early Career Travel Award, 2013
- Invited Participant, ECO-DĀS VIII, 2008
- Environmental Protection Agency STAR Fellow, 2005 – 2008
- VIMS Matthew Fontaine Maury Student Fellowship Award, 2007
- VIMS Department of Graduate Studies Equipment Grant, 2007
- VIMS Student Research Grant, 2005 – 2006
- VIMS Graduate Fellowship Award, 2002 – 2005
- VIMS GSA Conference Fund Award, 2003

## RESEARCH INTERESTS.

- Marine sediment biogeochemistry
- Food web ecology
- Carbon cycling
- Multi-stressor effects on biogeochemical cycles in coastal ecosystems

## PAPERS IN REFEREED JOURNALS.

- Spivak, A.C.** 2015. Benthic biogeochemical responses to changing estuary trophic state and nutrient availability: A paired field and mesocosm experiment approach. *Limnology and Oceanography*. 60(1):3-21.
- O.J. Schmitz, P.R. Raymond, J.A. Estes, W.A. Kurz, G.W. Holtgrieve, M.E. Ritchie, D.E. Schindler, **A.C. Spivak**, R.W. Wilson, M.A. Bradford, V. Christansen, L. Deegan, V. Smetacek, M.J. Vanni, and C.C. Wilmers. 2014. Animating the carbon cycle. *Ecosystems*. 17(2): 344-359.
- M.J. Osland, **A.C. Spivak**, J.A. Nestlerode, J.M. Lessman, A.E. Almario, P.T. Heitmuller, M.J. Russell, K.W. Krauss, F. Alvarez, D.D. Dantin, J.E. Harvey, A.S. From, N. Cormier, C.L. Stagg. 2012. Ecosystem development after mangrove wetland creation: plant soil change across a 20-year chronosequence. *Ecosystems*. 15(5): 848-866
- Spivak, A.C.**, M.J. Vanni, and E. Mette. 2011. Moving on up: can results from simple aquatic mesocosm experiments be applied across broad spatial scales? *Freshwater Biology*. 56(2): 279-291.
- Fox, S., Y. Olsen, and **A.C. Spivak**. 2010. Effects of bottom-up and top-down controls and climate change on estuarine macrophyte communities and the ecosystem services they provide, p. 129-145. In P.F. Kemp [ed.], *Eco-DAS VIII Symposium Proceedings*. ASLO. [doi:10.4319/ecodas.2010.978-0-9845591-1-4.129]
- Griffen, B.D., D. Spooner, **A.C. Spivak**, A.M. Kramer, A.E. Santoro, N.E. Kelly. 2010. Moving species redundancy toward a more predictive framework, p. 30-46. In P.F. Kemp [ed.], *Eco-DAS VIII Symposium Proceedings*. ASLO. [doi:10.4319/ecodas.2010.978-0-9845591-1-4.30]
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2009. Nutrient enrichment and food web composition affect ecosystem metabolism in an experimental seagrass habitat. *PLoS ONE* 4(10): e7473. [doi:10.1371/journal.pone.0007473]
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, J.G. Douglass, and J.P. Richardson. 2009. Epifaunal community composition and nutrient levels alter sediment organic matter composition in a seagrass bed: a field experiment. *Marine Ecology Progress Series* 376: 55-67.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2007. Top-down and bottom-up controls on sediment organic matter composition in an experimental seagrass system. *Limnology & Oceanography* 52(6): 2595-2607.
- J.G. Douglass, J.E. Duffy, **A.C. Spivak**, and J.P. Richardson. 2007. Nutrient versus consumer control of community structure in a Chesapeake Bay eelgrass habitat. *Marine Ecology Progress Series* 348: 71-83.
- E.A. Canuel, **A.C. Spivak**, E.J. Waterson, and J.E. Duffy. 2007. Biodiversity and food web structure influence short-term accumulation of sediment organic matter in an experimental seagrass system. *Limnology & Oceanography* 52(2): 590-602.

## OTHER PUBLICATIONS:

- Spivak Mesocosm Lab Video. 2014. *Oceanus*. <http://www.whoi.edu/oceanus/feature/mesocosm-lab>
- Spivak Mesocosm Lab Audio Slideshow. 2014. *Oceanus*. <http://www.whoi.edu/oceanus/feature/eric-slideshow>

## **TEACHING AND MENTORING EXPERIENCE.**

### *Post-doc co-advisor:*

Meagan Eagle Gonneea (USGS) 2014 – present

### *Graduate Student Committee Member:*

Evan Howard (WHOI-MIT) 2014 – Present

### *Graduate teaching MIT-WHOI Joint Program:*

Classic Papers in Chemical Oceanography Seminar (MIT 12.759) Spring 2012, 2014

Geochemistry: Marine Sediments (MIT 12.743) Spring 2013, 2015

### *Teaching Assistant:*

Graduate level - Fundamentals of Marine Science Lab, College of William & Mary, VA. 2005

Undergraduate level - Introductory Biology Lab, Bryn Mawr College, PA. 8/2000 – 5/2001

Undergraduate level - Field Ecology, Bryn Mawr College, PA. 8/2000 – 12/2000

Co-advisor MIT-WHOI Joint Program Chemical Oceanography students. 2011 – 2013

### *Undergraduate Student Mentoring:*

WHOI Guest students. Kelsey Gosselin 6/2014 – 12/2014. Claire Hoffman 6/2014-8/2014.

MBL NSF REU Intern. Alison Hall – 2014.

WHOI Summer Student Fellow Program. Jennifer Reeve – 2013.

Woods Hole Partnership in Education Program. Rea Pineda – 2012, Melisa Diaz – 2013.

Miami University's Undergraduate Summer Scholar Program. Jill Goodwin – 2009.

College of William & Mary. Undergraduate Thesis. Tim Montgomery – 2004–2005.

### *High School Student Mentoring:*

Massachusetts Science Fair. Lily Kane-Myette, Sarah Sherwood 2013–2014 (1<sup>st</sup> place State Fair); Sam McNichol 2015; Dmitry Shribak and Daniel Morrison 2015

Virginia Governor's School. Mara Kish – 2007.

## **PROFESSIONAL ACTIVITIES:**

### *WHOI (Non-education related):*

- Scientific Staff Executive Committee (SciSEC). 2015 – Present.
- Marine Chemistry and Geochemistry Department seminar series organizer. 2015 – Present.
- Seawater Users Committee. 2011 – Present.
- Women's Committee. 2011 – 2013.

### *Outside WHOI:*

- Reviewer: NSF panel member, ad hoc reviewer for the granting agencies NSF and Sea Grant as well as the journals *Limnology & Oceanography*, *Limnology & Oceanography Methods*, *Estuaries and Coasts*, *Oikos*, *Freshwater Biology*, *Marine Biology*, *Marine Pollution Bulletin*, *Applied Geochemistry*, *Journal of Experimental Marine Biology and Ecology*, *Wetlands*, *PLoS One*, *Ecology*
- Review editor for *Frontiers in Global Change and the Future Ocean*. 2014 – Present.
- Session Co-chair Joint Aquatic Sciences Meeting 2014, Portland, OR. Functioning of salt marsh and mangrove wetland ecosystems across ecological and spatial scales.
- Student presentation judge. Semester in Environmental Science, MBL, Woods Hole. 2011
- Talawanda Grade School Science Days. Oxford, OH. May 2009
- VIMS Marine Science Day. Gloucester Point, VA. May 2007.
- Smithsonian Environmental Research Center Open House Day. Edgewater, MD. May 2002.

## PROFESSIONAL AFFILIATIONS.

- Coastal and Estuarine Research Federation
- Association for the Sciences of Limnology and Oceanography
- Society of Wetland Scientists
- American Geophysical Union

## PAPERS PRESENTED AND INVITED LECTURES: (\* invited; ^ student presentation)

Kroeger, K.D., J. Tang, S. Moseman-Valtierra, N.K. Ganju, J.W. Pohlman, M.E. Gonnee, **A.C.**

**Spivak**, Z.A. Wang. 2014. Quantifying salt marsh blue carbon: Research to enable calculation of carbon and greenhouse gas budgets. Restore America's Estuaries. Washington, DC.

Coolen, M.J.L., W.D. Orsi, and **A.C. Spivak**. 2014. Gene expression dynamics in thawing permafrost soils. Goldschmidt. Sacramento, CA.

**Spivak, A.C.**, J.L. Reeve, and J.W. Pohlman. 2014. Rapid turnover of carbon recently fixed by the salt marsh grass *Spartina alterniflora*: insights from a stable isotope probing experiment. Joint Aquatic Sciences Meeting. Portland, OR. Oral Presentation.

Kroeger, K.D., J.W. Pohlman, N. Ganju, **A.C. Spivak**, Z.A. Wang, A. Green, T.W. Brooks, S. Baldwin, S. Moseman-Valtierra, J. Tang. 2014. Salt marsh carbon budgets: the role of tidal exchanges of dissolved and particulate organic carbon. Joint Aquatic Sciences Meeting. Portland, OR. Oral Presentation.

\***Spivak, A.C.** 2014. Seasonal and Nutrient Enrichment Effects on Carbon Exchange Between Benthic Microalgae and Bacteria in Salt Marsh Tidal Creeks. Annual TIDE Experiment Meeting. Marine Biological Laboratory, Woods Hole, MA. Oral Presentation.

\***Spivak, A.C.** 2014. Sediment organic matter responds rapidly to habitat quality: implications for shallow ecosystem recovery from eutrophication. Dauphin Island Sea Lab. Dauphin Island, AL. Oral Presentation.

**Spivak, A.C.** 2014. Eutrophication affects carbon exchange between benthic microalgae and bacteria in salt marsh tidal creeks. Ocean Sciences Meeting. Honolulu, HI. Oral Presentation.

^Howard, E.M., R.H. Stanley, **A.C. Spivak**. 2014. The effect of nutrient enrichment on primary production in salt marsh tidal creeks: insights from triple oxygen isotopes. Ocean Sciences Meeting. Honolulu, HI. Poster Presentation

^Reeve, J., **A.C. Spivak**, J.W. Pohlman. 2014. Rapid carbon cycling in an experimental *Spartina alterniflora* system. Ocean Sciences Meeting. Honolulu, HI. Poster Presentation.

\***Spivak, A.C.** 2013. Sediment organic matter responds rapidly to habitat quality: implications for shallow ecosystem recovery from eutrophication. WHOI Marine Chemistry & Geochemistry Department Seminar. Woods Hole, MA. Oral Presentation.

**Spivak, A.C.** 2013. Organic matter composition of eutrophic sediment responds rapidly to reduced nutrient loading: a field and mesocosm experiment. Coastal and Estuarine Research Federation Meeting. San Diego, CA. Oral Presentation.

\***Spivak, A.C.** and R. Stanley. 2013. Exploring nutrient enrichment effects on benthic production and algal-bacterial coupling. Plum Island Ecosystems LTER Annual Meeting. Marine Biological Laboratory. Woods Hole, MA. Oral Presentation.

**Spivak, A.C.** 2013. Recovering from long term eutrophication : water quality alters sediment biogeochemistry in mesocosm and field experiments. Aquatic Sciences Meeting. New Orleans, LA. Oral Presentation.

^Pineda, R.R. and **A.C. Spivak**. 2013. Eutrophication in estuaries causes changes in the quality and quantity of food available to herbivorous invertebrates. Aquatic Sciences Meeting. New Orleans, LA. Oral Presentation.

- \***Spivak, A.C.**, M.J. Vanni, and L. Knoll. 2012. Can detritivorous fish alter carbon dynamics in eutrophic reservoirs? Yale Climate and Energy Initiative Annual Conference: Managing Species for Regulating the Carbon Cycle. New Haven, CT. Oral Presentation.
- \***Spivak, A.C.**, M.J. Vanni, and L. Knoll. 2012. Can detritivorous fish alter carbon dynamics in eutrophic reservoirs? WHOI Biology Department Seminar. Woods Hole, MA. Oral Presentation.
- \***Spivak, A.C.** and M.J. Osland. 2011. Development of sediment organic matter in restored mangrove habitats: insight from a 20-y chronosequence. Marine Biological Laboratory. Woods Hole, MA. Oral Presentation.
- Spivak, A.C.** and M.J. Vanni. 2010. Water velocity and bioturbation alter sediment resuspension and biogeochemistry in an experimental freshwater mesocosm system. American Geophysical Union Meeting. San Francisco, CA. Poster Presentation.
- Spivak, A.C.** and M.J. Vanni. 2010. Fish disturbance affects sediment resuspension and biogeochemistry. Ecological Society of America Meeting. Pittsburgh, PA. Poster Presentation.
- \***Spivak, A.C.** 2010. Food web diversity alters sediment biogeochemistry in a seagrass habitat. WHOI Marine Chemistry and Geochemistry Department Seminar. Woods Hole, MA. Oral Presentation.
- \***Spivak, A.C.** 2009. Resource levels and food web composition affect seagrass ecosystem functioning. US EPA Gulf Ecology Division. Gulf Breeze, FL. Oral Presentation.
- Spivak, A.C.**, A. Babler, N. Hayes, L. Knoll, E. Mette, F. Rowland, and M.J. Vanni. 2009. Moving on up: Mesocosm dimensions affect ecosystem properties in simple aquatic experiments. Ecological Society of America Meeting. Albuquerque, NM. Oral Presentation.
- Spivak, A.C.** 2009. Nutrient enrichment and food web composition affect ecosystem metabolism in an experimental seagrass habitat. Great Lakes Regional Biogeochemistry Symposium. Kellogg Biological Station, MI. Oral Presentation.
- Spivak, A.C.** 2008. Bottom-up and top-down controls on sedimentary ecosystem functioning. Eco-DAS VIII Symposium. Honolulu, HI. Oral Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2008. Resource availability, biodiversity, and trophic structure affect nutrient dynamics in an experimental seagrass ecosystem. Ocean Sciences Meeting. Orlando, FL. Oral Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, J.G. Douglass, and J.P. Richardson. 2007. Trophic structure and resource availability alter SOM composition in a seagrass system: a field experiment. Estuarine Research Federation Meeting. Providence, R.I. Oral Presentation.
- Spivak, A.C.** 2006. Top-down and bottom-up effects of community structure on SOM content. EPA STAR Fellows Conference. Washington, DC. Poster Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2006. Evidence of top-down and bottom-up controls on SOM composition in an experimental seagrass system. Ecological Society of America Meeting. Memphis TN. Oral Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2005. Linking community structure to carbon cycling: evidence of cascading effects in an experimental seagrass system. Estuarine Research Federation Meeting. Norfolk, VA. Oral Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2005. The effects of community structure and resource availability on SOM composition in an experimental seagrass system. Ecological Society of America Meeting. Montreal, Canada. Oral Presentation.
- J.E. Duffy, K.E. France, J.G. Douglass, **A.C. Spivak**, and J.P. Richardson. 2005. Biodiversity and ecosystem functioning in food webs: insights from seagrass ecosystems. Ecological Society of America Meeting. Montreal, Canada. Oral Presentation.
- Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and J.P. Richardson. 2005. Benthic community structure

and carbon cycling in an experimental eelgrass system. Benthic Ecology Meeting. Williamsburg, VA. Oral Presentation.

\***Spivak, A.C.**, E.A. Canuel, J.E. Duffy, and E.J. Waterson. 2004. Trophic structure, biodiversity, and carbon cycling: evidence of cascading effects in an experimental eelgrass system. Joint Oceans Research Conference between the ASLO and TOS. Honolulu, HI. Oral Presentation.

E.A. Canuel, **A.C. Spivak**, E.J. Waterson, and J.E. Duffy. 2003. Accumulation and composition of sediment organic carbon in eelgrass beds: effects of benthic biodiversity and food web structure on sediment biogeochemistry. Estuarine Research Federation Meeting. Seattle, WA. Oral Presentation.

**Spivak, A.C.**, E.A. Canuel, and J.E. Duffy. 2003. Effects of biodiversity on biogeochemical cycling in an eelgrass (*Zostera marina*) system. Benthic Ecology Meeting. Mystic, CT. Poster Presentation.