

Curriculum Vitae

Lindsay Devon Brin

Brown University/Marine Biological Laboratory Joint PhD Program

Department of Ecology & Evolutionary Biology

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RESEARCH INTERESTS

- Sediment biogeochemistry, particularly nitrogen cycling, and the regulation of estuarine, coastal and marine biogeochemical processes by environmental factors
- Microbial ecology, and the relationship between microbial community structure and biogeochemical processes
- The environmental consequences of human actions, and how the dynamic relationship between humans and ecosystems may change in the next century of climate change and human land use

EDUCATION

Brown University / Marine Biol. Lab. Joint Program, Providence, RI *Sept 2008 – present*

Doctoral candidate in Coastal Biogeochemistry and Microbial Ecology

Advisors: Jeremy Rich (Brown, EEB) and Anne Giblin (MBL, Ecosystems)

Dissertation topic: *Environmental regulation of nitrate reduction processes and microbial communities in coastal sediments*

Relevant coursework: Ocean Biogeochemical Dynamics; Terrestrial Biogeochemistry and Ecosystem Functioning; Computational Approaches to Modeling and Quantitative Analysis in the Natural Sciences; Topics in Ecology and Evolutionary Biology

Boston University Marine Program, Woods Hole, MA

Sept 2006 – May 2008

M.A. in Biology

Advisor: Ivan Valiela

Thesis: *Nitrogen retention and export in experimental salt marsh plots exposed to chronic nutrient addition*

Relevant coursework: Marine Ecological Processes; Global Coastal Change

Woods Hole Oceanographic Inst./MA Inst. of Tech., Woods Hole, MA *Sept 2006 – May 2007*

Class credit towards a Masters

Relevant coursework: Biological Oceanography; Marine Organic Geochemistry; Applied Statistics; Stable Isotope Ecology

Swarthmore College, Swarthmore, PA

May 2005

B.A. in Biology and Environmental Studies

University of Cape Town, Cape Town, South Africa

January – June 2004

Study abroad program in environmental studies

Coursework emphasis on local ecology and environmental issues

AWARDS/FELLOWSHIPS

The Sounds Conservancy Grant,

May 2012

Quebec-Labrador Foundation Atlantic Center for the Environment (QLF)

- Funding support to measure the denitrification and anammox temperature responses in two sites that differ in temperature and organic carbon availability at several times throughout the year

Stanley Watson Graduate Fellowship in Environmental Studies*April 2012*

Brown-MBL Graduate Program

- Fellowship awarded to a graduate student in the Brown-MBL program who has demonstrated outstanding scientific achievement and progress toward a doctoral degree

National Defense Science and Engineering Graduate Fellowship, Department of Defense &

American Society for Engineering Education

Sept 2008 – Sept 2011

- Fellowship (tuition and stipend) to support graduate work in science and engineering, intended to foster the competitiveness of United States scientists and engineers

The Sounds Conservancy Grant,*May 2007*

Quebec-Labrador Foundation Atlantic Center for the Environment (QLF)

- Funding support to measure denitrification rates in several subestuaries of Waquoit Bay, MA, which receive different land-derived nitrogen loads due to varied degrees of watershed urbanization

BIOLOGY AND RESEARCH EXPERIENCE

Brown University/Marine Biological Laboratory Joint PhD program,

Rich (Brown) and Giblin (MBL) Laboratories

*Sept 2008 - present**Student; Advisors: Jeremy Rich and Anne Giblin*

- Conducted a study of anammox and denitrification in Massachusetts and Rhode Island coastal sediments over a 3-year field program of sampling and experiments, including sediment nutrient and oxygen profiles, potential rate measurements, and correlation of rates with environmental factors
- Explored seasonal and regional differences in the response of sediment nitrate reduction to temperature by designing and constructing a thermal gradient incubator, and using it to determine thermal profiles of anammox and denitrification, which will be compared to microbial community structure
- Designed and conducted a microcosm study to explore the effects of temperature change and carbon availability on denitrifier and anammox bacteria communities, process rates, and temperature responses

Boston University Marine Program, Valiela Laboratory*Sept 2006 – May 2008**Student; Advisor: Ivan Valiela*

- Conducted thesis work investigating the nitrogen retention capability of salt marshes exposed to chronic fertilization at several treatment levels
- Developed and executed a course of research to determine current nutrient inputs from land and atmospheric deposition to Little Pond, Falmouth, MA, using groundwater sampling and a nitrogen loading model

University of South Carolina, Wethey Laboratory*June 2005 – May 2006**Research Assistant; PI: David Wethey*

- Conducted NASA/NOAA-sponsored research on the mechanisms determining geographic limits of intertidal fauna
- Developed an ecological model that uses first-principles (i.e. solar radiation, windspeed, air temperature) to forecast intertidal organism body temperature, which is then related to population abundance and mortality events

Wise Lab. of Env'tal & Genetic Toxicology, U. Southern Maine*June – August 2004**Research Assistant; Mentor: Rebecca Kelly*

- Conducted experiments on cells from an endangered Northern Right Whale to determine the toxicity level of, and chromosomal damage due to, known carcinogens found in anti-fouling paints

OTHER TRAINING

Microsensor workshop, Unisense A/S, Aarhus, Denmark*16-17 August 2012*

- Learned about microsensor theory and construction, and experimented with microsensors and electrodes for measuring various chemical analytes (e.g., O₂, N₂O, pH)

BIOLOGY TEACHING EXPERIENCE

Guest lectures

Brown University, Principles of Ecology class:

Introduction to Biogeochemistry

22 April 2010

Brown University, Principles of Ecology class:

Ecosystem Ecology and Productivity

*22 March 2012***Brown University**

Sheridan Center, Teaching Assistant orientation leader

Fall 2011

Principles of Ecology, Grader

Spring 2011

Principles of Ecology, Head teaching assistant/guest lecturer

Spring 2010

Microbial Diversity and the Environment, Teaching assistant

*Spring 2009***Brown University Sheridan Center Certification***Spring 2012*

- Successfully completed *Certificate I: Reflective teaching*, which involved a semester of lectures and workshops, a micro-teaching session, and a teaching observation

Swarthmore College Field Trip, Instructor*October 2007*

- Taught a one-day course on long-term ecological research at field sites in Great Sippewissett Marsh and Waquoit Bay, Cape Cod, MA
- Covered biological, ecological and environmental science topics such as watershed N inputs to estuaries, groundwater nutrient transport, salt marsh N cycling, eutrophication and algal blooms, diurnal and seasonal tidal cycles, and key research findings from each location

NSF Research Experience for Undergraduates Program, Mentor*Summer 2007*

- Mentored an REU student from UMass, Amherst, on a pilot study investigating nutrient retention in experimental plots in Great Sippewissett Marsh, Cape Cod, MA

Strath Haven High School, Biology tutor*Fall 2004*

- Developed teaching skills by working with a student with a learning disability (Attention-Deficit Hyperactivity Disorder; ADHD)

PUBLICATIONS AND PRESENTATIONS

Publications

Brin, L.D., A.E. Giblin and J.J. Rich. *In prep.* Nitrogen loss pathways in coastal and shelf sediments: Defining environmental controls in New England as a model system.

Brin, L.D., A.E. Giblin and J.J. Rich. *In prep.* Physiological shifts in the temperature response of denitrifying and anammox bacterial communities in coastal sediments.

Brin, L., I. Valiela, B. Howes and D. Goehringer. 2010. Nitrogen interception and export by experimental salt marsh plots exposed to chronic nutrient addition. *Marine Ecology Progress Series*. 400: 3-17. (Feature article)

Wetthey, D.D., L.D. Brin, B. Helmuth and K.A.S. Mislan. 2011. Predicting intertidal organism temperature with modified land surface models. *Ecological Modeling*. 222: 3568-3576.

Abstracts

L.D. Brin, J.J. Rich and A.E. Giblin. 2012. Physiological shifts in the temperature response of denitrifying and anammox bacterial communities in coastal sediments. 14th International Symposium on Microbial Ecology, Copenhagen, Denmark, August 19-24.

J.J. Rich, L.D. Brin, A. Hardison, M. Nelson, J. Tucker and A.E. Giblin. 2012. Resolving the aquatic nitrogen cycle: Benthic anaerobic ammonium oxidation (anammox) in coastal Rhode Island. Ecological Society of America 97th Annual Meeting, Portland, Oregon, August 5-10.

L.D. Brin, J.J. Rich and A.E. Giblin. 2012. Nitrogen loss pathways in coastal and shelf sediments: Defining controls in New England as a model system. New England Estuarine Research Society Meeting, Plymouth, Massachusetts, April 12-14.

L.D. Brin, J.J. Rich and A.E. Giblin. 2011. Nitrogen loss pathways in coastal and shelf sediments: Beginning to define controls in New England as a model system. American Society of Limnology and Oceanography Aquatic Sciences Meeting, San Juan, Puerto Rico, February 13-18. Won award for best student poster/presentation.

L.D. Brin and I. Valiela. 2008. Nitrogen retention and loss in experimental salt marsh plots exposed to chronic nutrient addition. American Society of Limnology and Oceanography Summer Meeting, St. John's, Newfoundland, Canada, June 8-13.

L.D. Brin and I. Valiela. 2008. Nitrogen retention and loss in experimental salt marsh plots exposed to chronic nutrient addition. New England Estuarine Research Society, Fall Meeting, Block Island, RI, May 1-3.

L.D. Brin and I. Valiela. 2007. Future Complications: Estuaries in a 21st century of climate and human-driven ecological change: Temperature and N cycling in estuaries. Estuarine Research Federation Meeting, Providence, RI, November 4-8.

D.S. Wetthey, L.D. Brin and B.S. Helmuth. 2007. Ecological Forecasting in the Intertidal Zone: From weather forecasts to body temperatures and mortality risks. Estuarine Research Federation Meeting, Providence, RI, November 4-8.

Speaker/presenter

Academic Talks

Brin, L.D. 2012. Physiological shifts in the temperature response of microbial communities in Rhode Island sediments. NSF project meeting, Ecosystems Center, Marine Biological Laboratory, June 4.

Brin, L.D. 2012. Microbial processes in a sea of change: The regulation of denitrification and anammox by environmental factors. Ecology and Evolutionary Biology Brown Bag seminar, Brown University, April 10.

Brin, L.D., J. Rich. 2011. Anammox rates in New England coastal sediments. Oce-N Meeting, University of Rhode Island Graduate School of Oceanography, July 14.

Brin, L.D. 2009. Estuaries in flux: Coastal nitrogen cycling in the face of anthropogenic and environmental change. Ecology and Evolutionary Biology Brown Bag seminar, Brown University, February 20.

Unpublished Reports

Brin, L. and J. Gius. 2006. Current nutrient inputs from land and atmospheric deposition to Little Pond, Falmouth, Massachusetts. Submitted to the Massachusetts Department of Environmental Protection.

PROFESSIONAL SOCIETIES

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| Sigma Xi | 2012-present |
| International Society for Microbial Ecology | 2012-present |
| New England Estuarine Research Society | 2008-present |
| Association for the Sciences of Limnology and Oceanography | 2008-present |