KRISTIN E. DITZLER STROCK

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Climate Change Institute
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RESEARCH INTERESTS

Freshwater and ecosystem ecology and paleoecology, ecosystem response to changes in climate and atmospheric deposition, watershed biogeochemistry, algal ecology, food-web interactions, freshwater resource management

EDUCATION

2010-present Ph.D. Ecology and Environmental Science, University of Maine (4.0 GPA)
Project title: Deciphering climate-mediated changes in boreal lake ecosystems
Advisor: Dr. Jasmine E. Saros
Anticipated date of completion June, 2013

2010 M.S. Ecology and Environmental Science, University of Maine (3.9 GPA)
Project title: Effects of White Perch introductions on food web dynamics: combining paleolimnological and whole-lake biomanipulation approaches
Advisors: Dr. Kevin Simon and Dr. Jasmine E. Saros

2006 B.S. Biology, James Madison University, *magna cum laude* (3.7 GPA)

PROFESSIONAL EXPERIENCE

2012 Research Assistant, EPA Clean Air Act trends research, University of Maine
2011 Teaching Assistant, Introductory Biology (100), University of Maine
2011 Teaching Assistant, Organismal Biology (200), University of Maine
2010 Research Assistant, Portland Water District paleolimnological research, University of Maine
2009 Teaching Assistant, Organismal Biology (200), University of Maine
2006-2008 Biologist, Watershed Assessment and Protection, Susquehanna River Basin Commission
2005 Teaching Assistant, Landscape Ecology, James Madison University
2005-2006 Research Assistant, Historical mercury contamination research, James Madison University
2004 Teaching Assistant, Cell and Molecular Biology, James Madison University
2003-2004 Research Assistant, Molecular genetics research, James Madison University

RESEARCH GRANTS

2012 **Strock, K.E.D.** Understanding climate-driven change in lake habitat structure in Isle Royale National Park. National Park Service George Melendez Wright Climate Change Fellowship Program

2011 Saros, J.E., **Strock, K.E.D.**, Nelson, S., Birkel, S.D. Analyzing legacy data in a climate context to decipher modern changes in lakewater chemistry. Maine USGS Water Research Resources Institute - Water Resources Research Grants Program

2011 **Strock, K.E.D.** Exploring climate-induced changes in West Greenland lakes. Churchill Exploration Fund

2011 **Ditzler, K.E.** Understanding the interactive effects of climate change and air pollution on lake ecosystems: implications for declining water clarity in Acadia National Park. University of Maine Graduate Student Government (Supplies Grant)

2009 **Ditzler, K.E.** Impacts of White Perch introductions on trophic dynamics: paleolimnological record of zooplankton grazing and nutrient cycling. Senator George J. Mitchell Center Water Resource Research Institute Grant Program

TRAVEL GRANTS

2013 **Strock, K.E.D.** A diatom-based reconstruction of lake thermal stratification in Isle Royale National Park, presented at the 2013 North American Diatom Symposium. University of Maine Graduate Student Government (Travel to present)

2012 **Strock, K.E.D.** The effects of extreme climate events on lakewater chemistry: implications for dissolved organic carbon trends in the Northeast U.S., presented at the 2013 American Society of Limnology and Oceanography meeting. University of Maine Graduate Student Government (Travel to present)

2012 **Strock, K.E.D.** Climate mediated changes in energy in Isle Royale National Park USA: a diatom based reconstruction of changes in thermal lake stratification, presented at the 12th meeting of the International Paleolimnology Association. University of Maine Graduate Student Government (Travel to present)

2011 **Strock, K.E.D.** Exploring the interactive effects of climate change and declining sulfur deposition as drivers of synchronous changes in water clarity across lakes in Acadia National Park, presented at the 13th meeting of the Global Lake Ecological Observatory Network. University of Maine Graduate Student Government (Travel to present)

2010 **Ditzler, K.E.** Impacts of White Perch introductions on lake plankton: combining paleolimnological and whole-lake biomanipulation approaches, presented at the American Society of Limnology and Oceanography and the North American Benthological Society joint meeting. University of Maine Graduate Student Government (Travel to present)

PUBLICATIONS

Lake, B.A., C.R. Salm, **K.E. Strock**, J.E. Saros and A. Amirbahman. 2011. Multi-proxy paleolimnological assessment of biogeochemical versus food web controls on the trophic states of two shallow, mesotrophic lakes. *Journal of Paleolimnology* 46: 45 – 57.

Strock, K.E., J.E. Saros, K.S. Simon, S. McGowan, M.T. Kinnison. Cascading effects of generalist fish introduction in oligotrophic lakes. *Hydrobiologia*. In press.

Strock, K.E., S.J. Nelson, J.E. Saros, A. Baumann, J.S. Kahl, W. McDowell. Trends in biogeochemical recovery from acidification in the Northeastern U.S.: new insights from three decades of lake monitoring. *Environmental Science and Technology*. In prep.

AWARDS AND HONORS

University of Maine Doctoral Research Fellowship (2013)
Correll Fellowship University of Maine (2012)
Graduate Student Travel Award University of Maine School of Biology and Ecology (2012)
James Madison University Biology Merit Scholar (2002)

INVITED ORAL PRESENTATIONS

2010: Lake, B.A., **K.E. Ditzler**, C. Wigdahl, J.E. Saros, A. Amirbahman. Multi-proxy paleolimnological assessment of biogeochemical versus food web controls on the trophic states of East and North Ponds, Maine USA. Colby College Sustainability Solutions Partners Meeting. Waterville, Maine.

2009: **Ditzler, K.E.**, J.E. Saros, K.S. Simon. Impacts of White Perch introductions on food web dynamics: paleolimnological record of zooplankton grazing and nutrient cycling. University of Nottingham Environmental and Geomorphological Sciences Research Seminar Series. Nottingham, United Kingdom.

OTHER ORAL PRESENTATIONS

2013: **Strock, K.E.D**., J.E. Saros, S. Nelson. The effects of extreme climate events on lakewater chemistry: Implications for "brownification" in Maine lakes. Maine Water Conference. Augusta, Maine.

2013: **Strock, K.E.D.**, J.E. Saros, S.J. Nelson, S.D. Birkel. The effects of extreme climate events on lakewater chemistry: implications for dissolved organic carbon trends in the northeast U.S. American Society of Limnology and Oceanography Meeting. New Orleans, Louisiana.

2013: Saros, J.E., **K.E. Strock**, J.R. Stone, Climate-induced changes in lake thermal structure and productivity inferred from paleolimnological reconstructions. American Society of Limnology and Oceanography Meeting. New Orleans, Louisiana.

2012: **Strock, K.E.D**., J.E. Saros, S. Nelson. Why climate matters in recovery from acidification in northeastern US surface waters. Maine Water Conference. Augusta, Maine.

2011: **Strock, K.E.D.**, A. Ellsworth, B. Gawley, J.E. Saros. Quality air and water at Acadia National Park. Northeast Region Air Quality Committee Meeting. Roosevelt Campobello International Park, New Brunswick.

2011: **Strock, K.E.D**., J.E. Saros, B. Gawley, A. Ellsworth. Understanding the interactive effects of climate change and air pollution on lake ecosystems: implications for declining water clarity in Acadia National Park. 19th Annual Harold W. Borns Symposium. University of Maine, Maine.

2011: **Strock, K.E.D.**, J.E. Saros, B. Gawley, A. Ellsworth. Understanding the interactive effects of climate change and air pollution on lake ecosystems: implications for declining water clarity in Acadia National Park. Maine Water Conference. Augusta, Maine.

2010: **Ditzler, K.E.**, J.E. Saros, K.S. Simon, M. T. Kinnison, S. McGowan. Impacts of White Perch introductions on food web dynamics: paleolimnological and whole-lake biomanipulation approaches. Joint meeting of the American Society of Limnology and Oceanography and the North American Benthological Society. Santa Fe, New Mexico.

2010: **Ditzler, K.E.**, J.E. Saros, K.S. Simon, M. T. Kinnison, S. McGowan. Impacts of White Perch introductions on food web dynamics: paleolimnological and whole-lake biomanipulation approaches. 18th Annual Harold W. Borns Symposium. University of Maine, Maine.

2010: **Ditzler, K.E.**, J.E. Saros, K.S. Simon, M. T. Kinnison. Impacts of White Perch introductions on food web dynamics: paleolimnological and experimental analysis of zooplankton grazing and nutrient cycling. Maine Water Conference. Augusta, Maine.

2009: **Ditzler, K.E**., J.E. Saros, K.S. Simon. Impacts of White Perch introductions on food web dynamics: paleolimnological record of zooplankton grazing and nutrient cycling. 17th Annual Harold W. Borns Symposium. Climate Change Institute University of Maine, Maine.

2007: Gavin, A.J. **K.E. Ditzler.** Paxton Creek Stormwater Project: Development of an innovative and cooperative stormwater management approach for Pennsylvania communities. National Fish and Wildlife Foundation Targeted Watershed Grants Project Roundtable. Staunton, Virginia.

POSTER PRESENTATIONS

2012: **Strock, K.E.D.**, J.E. Saros, M.B. Edlund, D.R. Engstrom. Climate-mediated changes in boreal lakes: A diatom-based reconstruction of changes in lake thermal stratification. International Paleolimnology Symposium. Glasgow, Scotland.

2012: **Strock, K.E.D**., J.E. Saros, S. Nelson. Analyzing legacy data in a climate context to decipher modern changes in lakewater chemistry. BIOGEOMON. Northport, Maine.

2011: Hargreaves,B., J. Brentrup, K. Rose, **K. Strock**, L. Knoll, J. Saros, C. Williamson. Lakes as sentinels of change: DOC signals from terrestrial watersheds. Northeastern Ecosystem Research Cooperative. Durham, New Hampshire.

2011: **Strock, K.E.D**., J.E. Saros. Exploring the interactive effects of climate change and declining sulfur deposition as drivers of synchronous changes in water clarity across lakes in Acadia National Park. Global Lake Ecological Observatory Network. Lake Sunapee, New Hampshire.

2011: Saros, J.E., **K.E.D. Strock**, B. Gawley, A. Ellsworth. Declining water clarity in Acadia's lakes: Trends and possible causes. Acadia National Park Science Symposium. Bar Harbor, Maine.

2009: **Ditzler, K.E.**, J.E. Saros, K.S. Simon, M. T. Kinnison. Impacts of White Perch introductions on food web dynamics: paleolimnological and experimental analysis of zooplankton grazing and nutrient cycling. 29th International Symposium of the North American Lake Management Society. Hartford, Connecticut.

TEACHING EXPERIENCE:

Teaching Assistant:

Bio 100: Introductory Biology, Biology Department, University of Maine
1 semester; Inquiry-based laboratory format

Bio 200: Organismal Biology, Biology Department, University of Maine

2 semesters; Inquiry-based and traditional laboratory format

Bio 214: Cell and Molecular Biology, Biology Department, James Madison University
1 semester; laboratory-based

Bio 456: Landscape Ecology, Biology Department, James Madison University
1 semester; laboratory-based

Guest Lectures:

Bio 688: Global Change in Freshwater Ecosystems
I delivered a 30 minute lecture entitled: "The effects of climate change on eutrophication" followed by a class discussion that compared three scientific papers that explored climate change effects on eutrophication across different scales of space and time with the goal of synthesizing findings across these scales to critically discuss future implications for freshwater ecosystems.

Bio 572: Paleoecology
I delivered a 30 minute lecture entitled: "Using paleolimnological records to explore ecological interactions," followed by an interactive class activity that used peer learning techniques (think, pair, share) to explore paleolimnological techniques in primary literature with the goal of broadening student's scientific understanding of key ecological concepts.

Class Development:

Contributed to the development of teaching assistant training materials for inquiry biology laboratory courses, including rubric development and instruction materials on how to effectively evaluate scientific literature.

Educational Outreach:

Worked with local high school teachers at an NSF funded Scientific Data Literacy Workshop, where we developed tools to better educate students about the process of collecting, organizing, and interpreting scientific data.

Facilitator and teacher of the Paleoecology unit of the Climate Change Institute's Annual Science Day for local middle and high school groups at the University of Maine

Coordinator of the Susquehanna River Basin Commission's Conservation Landscaping Workshop for local Pennsylvania citizens.

Presenter at the Paxton Creek Watershed and Education Association's stream macroinvertebrate interactive education seminar at Harrisburg Area Community College, where I led a group of high school students, college students, and local community members through a hands-on study of freshwater bioindicators to better understand the effects of human disturbance on the quality of freshwater ecosystems.

Training Activities:

Maine Center for Research in STEM Education (RiSE Center) workshop "Scaffolding Undergraduate Peer Facilitation: The Maine Learning Assistant Program" (2011)

Maine Center for Research in STEM Education (RiSE Center) workshop "Designing effective broader impact projects involving scientists, K-12 teachers and students" (2012)

Student Research Mentoring:

Assisted in mentoring Carl Tugend, an undergraduate student, during his research project and lab work at the University of Maine; responsibilities included supervising guiding research questions and data interpretation and assisting with field and laboratory work. (2012 - 2013)

Mentored Caroline Tozer, a high school student, for a summer research project through the University of Maine's "Orono High School Research Experience" program; responsibilities included development of project questions with the student, supervising fieldwork, and training in microscopy and sediment processing techniques as well as data analysis. (2011)

PROFESSIONAL AFFILIATIONS

American Geophysical Union
American Society of Limnology and Oceanography
Global Lake Ecological Observatory Network (GLEON)
Northeast Region Air Quality Committee

SERVICE ACTIVITIES

Member of the organizing committee for the North American Diatom Symposium
Reviewer for *Hydrobiologia*
Co-founder of the paleolimnology working group in GLEON
Reviewer for the University of Maine Graduate Student Government grant program
Mentor for the School of Biology and Ecology (SBE) Schoodic Experience for first year undergraduate students: introduced students to SBE coursework, faculty, research, and study topics

PROFESSIONAL DEVELOPMENT

Training in environmental policy and management including an overview of the issues related to environmental protection, implementation of environmental policy, and the transition in environmental policy toward sustainable communities through a seminar course in the Department of Public Administration at the University of Maine (2012)

Training in low temperature/pressure geochemistry with an overview of water-mineral interactions including congruent and incongruent solubility, complexing, redox reactions, ion exchange, coprecipitation, chemical precipitation, evaporation, and diffusion through a seminar course in the School of Earth and Climate Sciences (2012)

"Advancing women in academia" conference by the University of Maine Rising Tide Center (2012)

"Communicating science across disciplines, to stakeholders and to the general public" workshop at GLEON 13 (2011)

Collaborated with a variety of stakeholders from local (drinking water utilities, conservation districts and local stormwater regulatory agencies), state (Department of Environmental Protection), and federal (Environmental Protection Agency, Susquehanna River Basin Commission) entities on various watershed management projects

Gained experience in watershed management, habitat restoration, estuary monitoring, and integrating communities and conservation through an International Student Volunteer conservation work project in New Zealand (2005)

Advanced training in team building and environmental education at James Madison University and Genessee Valley Outdoor Learning Center (2004)

SKILLS

Software/Statistics

R; Sigmaplot; Systat; ArcGIS; YSI/Hydrolab/Hobo remote measurement sensors

Field

Lake and stream sampling; microcosm experimentation; whole lake manipulation; lake coring

Laboratory:

Flow injection ion chromatography; organic carbon by wet oxidation/non-dispersive infrared analyzer; fluorescence analysis and PARAFAC modeling of organic matter; chlorophyll - spectrophotometric; phytoplankton, zooplankton and macroinvertebrate identification; fossil diatom, ephippia and pigment analyses; loss-on-ignition