Kate A. Warner

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RESEARCH INTERESTS

Applied ecological and economic research of freshwater ecosystems; ecosystem response to climate change and abrupt climate change; watershed biogeochemistry; adaptation, mitigation, and resource management strategies.

EDUCATION

2013-present Ph.D. Ecology and Environmental Science, University of Maine, Orono, ME
Project Title: Ecological and economic implications of increased storm frequency and severity on drinking water resources
Project Advisors: Dr. Jasmine E. Saros and Dr. Mario F. Teisl
Anticipated date of completion, September 2018

2013 M.S. Ecology and Environmental Science, University of Maine, Orono, ME
Project title: Nitrogen subsidies in glacial meltwater: Implications for high elevation aquatic chains
Advisor: Dr. Jasmine E. Saros

2006 B.A. Environmental Science, Hobart and William Smith Colleges, Geneva, NY

PROFESSIONAL EXPERIENCE

September 2017 – May 2018

Research Assistant, School of Economics, University of Maine, Orono, ME
Investigate the economic impacts of increased storm frequency and severity on aquatic ecosystems and drinking water resources.

September 2016 - August 2017

Research Assistant, USGS Water Resources Research Institute, University of Maine, Orono, ME
Investigate the ecological and economic impacts of increased storm frequency and severity on aquatic ecosystems and drinking water resources. Assist with Maine lakes related research at the University of Maine.

November 2016 - February 2017

Intern, Tetra Tech, Inc. Boston, MA
Worked as a full time employee on the hazard mitigation team assisting with research that focused on resiliency and climate change tools that are available online with the goal of cataloging these tools as to their purpose, availability, ease of use, and value in resiliency planning. Specific roles and responsibilities included scholarly review of

relevant, publically available data to provide an in-depth review of climate change information and data available and analysis of available data with the intent of recommending how to incorporate the integration of climate change information into community planning processes and to support identification of resiliency projects.

September 2013 - August 2016

NSF-IGERT Trainee on Abrupt Climate Change, University of Maine, Orono, ME

Duration - 24 months total, ~60 hours per week

Examined novel questions about adaptation to abrupt climate change with an interdisciplinary group of anthropologists, ecologists, earth scientists, and economists using problem-based investigative techniques. Developed, submitted, and carried out an interdisciplinary grant proposal for a collaborative immersion project with other IGERT fellows. Project titled: Understanding the past, present and future of water resources in the Quebrada Quilcayhuanca, Cordillera Blanca, Peru: Implications of climate variations on the socio-economic value of grasslands and wetlands. Developed and completed a successful policy-based internship. Completed 20 credit hours of specific coursework on the physical, social, anthropological, economic, and environmental security aspects of climate change.

September 2014 - August 2015

Research Assistant, School of Economics, University of Maine, Orono, ME

Duration - 12 months, ~20 hours per week

Worked on developing a report on Maine's water quality for the Maine Development Foundation. Report included information on water quality for Maine's lakes, rivers, and beaches and the effects of changing water quality on Maine's economy.

August 2011 - May 2013

Teaching Assistant, School of Biology and Ecology, University of Maine, Orono, ME

Duration - 18 months total, ~20 hours per week

Sole lab instructor for 3 sections of 20-student inquiry based laboratories. Instructed BIO100, Introductory Biology and BIO200, Organismal Biology. Responsibilities included review of material, preparation, teaching, and grading.

April 2010 – August 2011

Educator, Maritime Gloucester, Gloucester, MA

Duration - 10 months total (worked spring and summer months only), 40 hours per week

Educated school groups ages Pre K through 9th grade in the marine sciences and history of Gloucester harbor. Helped to plan and teach students about the anatomy, functionality, habitat, and life of marine species.

October 2009 – April 2011

Ski Coach, Steamboat Springs Winter Sports Club, Steamboat Springs, CO

Duration - 12 months total (worked fall and winter months only), ~ 40-50 hours per week

Coached 10-12 year old athletes. Responsibilities included on hill assessment, administrative work, and race preparation.

January 2009 – April 2010, September 2010 – April 2011

Sales Manager, Backdoor Sports, Steamboat Springs, CO

Duration - 22 months total, ~35-80 hours per week (varied seasonally)

Worked as part of a team environment at a busy, comprehensive outdoor sports business.

October 2008 – March 2011

Head Alpine Ski Coach, Steamboat Springs High School, Steamboat Springs, CO

Duration - 15 months total (worked fall and winter months only), ~30 hours per week

Coached high school athletes to develop strong technique, better overall conditioning and individual responsibility. Additional responsibilities included coordinating volunteer help, maintaining schedules and rosters, and oversight of athletes.

July 2008 – October 2008

Environmental Scientist, EBI Consulting Inc., Burlington, MA

Duration - 4 months, ~50 hours per week

Prepared and managed NEPA reviews and Environmental Assessments for telecommunications sites throughout the Northeast. Environmental reviews included analysis of historic properties, wetlands, endangered species habitat, floodplains, and other areas of environmental concern.

July 2007 – July 2008

Production/Research Assistant, EBI Consulting Inc., Burlington, MA

Duration - 12 months, ~50 hours per week

Prepared and compiled environmental site assessments, National Environmental Policy Act Screening Reports (NEPA's), and occasional work with lead and asbestos reports. Other responsibilities included running databases and creating figures and maps.

August 2006 – July 2007

Assistant Soccer Coach, Hobart and William Smith Colleges, Geneva, NY

Duration - 11.5 months, ~50-60 hours per week

Assisted with recruiting, strength and conditioning, training sessions, and games.

Research Assistant, Hobart and William Smith Colleges, Geneva, NY

Duration - 11.5 months, ~15-20 hours per week

Researched the impact of seasonal change on the water chemistry of Seneca Lake, NY

May 2006 - August 2006

Hatchery Technician, MIT Sea Grant, Gloucester, MA

Duration - 3.5 months, ~40 hours per week

Kept and maintained Black Sea Bass, Winter Flounder and Sand Eels at a hatchery facility. Helped to prepare and edit an Eelgrass Manual. Developed and taught teacher-workshops to help them set up eelgrass systems in their classrooms.

Summers 2004 - 2005

Intern, Maritime Gloucester, Gloucester, MA

Duration - 8 months total, ~20 hours per week

Selected to work under the MIT Sea Grant internship Program. Collected, identified and analyzed samples of marine plant and animal species for education and knowledge for the purpose of preservation. Developed information and collected data essential to the continuing research of a specific salt marsh and for species inhabiting an identified coastal inlet. Led the gathering of data related to invasive species along the northern Massachusetts coastline.

Summers 2002 - 2005

Owner and Operator, Twisted Sista Lobster Company, Annisquam, MA
Duration - 16 months total, ~40 hours per week
One-boat lobstering business.

FELLOWSHIPS AND RESEARCH GRANTS

2018 **Warner, K.A.** University of Maine Summer Dissertation Writing Fellowship

2016 **Warner, K.A.**, Fowler, R.A. Implications of rapid climate change on lake algal ecology in Acadia National Park, U.S.A. Schoodic Institute Research Fellowship

2015 Saros, J.E., **Warner, K.A.**, Teisl, M.F. Assessing the Vulnerability of Maine's Drinking Water Resources to Extreme Precipitation Events, Maine USGS Water Resources Research Institute - Maine Water Resources Research Grants Program

2013 **Warner, K.A.**, Scheick, J. Understanding the past, present and future of water resources in the Quebrada Quilcayhuanca, Cordillera Blanca, Peru: Implications of climate variations on the socio-economic value of grasslands and wetlands. University of Maine Adaptation to Abrupt Climate Change IGERT

2013 **Warner, K.A.** Integrative Graduate Education Research Traineeship (IGERT) on Adaptation to Abrupt Climate Change (A2C2). National Science Foundation Research Fellow (2 year fellowship)

2012 **Warner, K.A.** Effects of nitrogen from melting glaciers in alpine lakes: Understanding implications for production in lake ecosystems. Churchill Exploration Fund

TRAVEL GRANTS

2017 **Warner, K.A.** Evaluating changes in epilimnion thickness and phytoplankton community structure from an extreme precipitation event, presented at the Global Lakes Ecological Observatory Network All Hands Meeting. University of Maine Graduate Student Government (Travel to Present)

2016 **Warner, K.A.** Variable responses in lakewater dissolved organic carbon to extreme precipitation events, presented at Association of Limnology and Oceanography Aquatic Sciences Meeting, ASLO Student Travel Award

2015 **Warner, K.A.** Assessing the economic vulnerability of Maine's drinking water resources to extreme precipitation events, presented at the Northeastern Agricultural and Resources Economics Association Annual Meeting. University of Maine Graduate Student Government (Travel to Present)

2014 **Warner, K.A.** Ecological and economic vulnerability of Maine drinking water resources to increased frequency of extreme storm events, presented at the Joint Aquatic Sciences Meeting. University of Maine Graduate Student Government (Travel to Present)

2013 **Warner, K.A.** Nitrogen Subsidies in Glacial Meltwater: Implications for High Elevation Aquatic Chains, presented at the U.S. American Society of Limnology and Oceanography Meeting. University of Maine Graduate Student Government (Travel to Present)

ORAL PRESENTATIONS

2018 Saros, J.E., **Warner, K.A.**, Malik, H.I., Yallop, M., Heathcote, A., McGowan, S. Exploring variable links among climate, ice out and thermal stratification: implications for diatom response to warming. IPA-IAL, Stockholm University. June 18-21, 2018

2018 **Warner, K.A.**, How do changes in the timing of ice-out affect Arctic versus boreal lakes? 26th Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. May 1-2, 2018

2018 **Warner, K.A.** Assessing the implications of abrupt climate change on boreal and Arctic lakes. Climate Change Institute's Exploration and Discovery Rundown Event. February 8, 2018.

2017 **Warner, K.A.** Extreme precipitation and Maine's drinking water resources. Invited class lecture in Lake Ecology, University of Maine, Orono, Maine. November 9, 2017

2017 **Warner, K.A.** Investigating the response of Maine's drinking water lakes to extreme precipitation events. 11th Annual Maine Drinking Water Protection Seminar, Augusta, Maine. September 7, 2017

2017 **Warner, K.A.**, Fowler, R.A., Saros, J.E. Implications of extreme precipitation events on lakes in Acadia National Park. 25th Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 13-14, 2017

2017 **Warner, K.A.,** Saros, J.E. Variable responses in lakewater dissolved organic carbon to extreme precipitation events. Association of Oceanography and Limnology Aquatic Sciences Meeting. Honolulu, HI. March 3, 2017

2016 Saros, J.E., Burpee, B.T., Slemmons, K. E., **Warner, K.A.** Temporal and Spatial Variability in the effects of nitrogen subsidies in glacial meltwater on alpine aquatic ecosystems. Association of Limnology and Oceanography Summer Meeting, Santa Fe, NM. June 6, 2016

2016 **Warner, K.A.**, Saros, J.E., Teisl, M.F. Investigating the response of Maine's drinking water resources to extreme precipitation events. 24th Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 14-15, 2016

2016 **Warner, K.A.**, Saros, J.E. Investigating the response of Maine's drinking water resources to extreme precipitation events. Maine Sustainability and Water Conference, Augusta, Maine. March 29, 2016

2015 **Warner, K.A.**, Teisl, M.F., Saros, J.E. Assessing the economic vulnerability of Maine's drinking water resources to extreme precipitation events. Northeastern Agricultural and Resource Economics Association Meeting, Newport, Rhode Island. June 29-30, 2015

2015 **Warner, K.A.**, Teisl, M.F., and Saros, J.E. Assessing the vulnerability of Maine's drinking water resources to extreme precipitation events. 23rd Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 9-10, 2015

2015 **Warner, K.A.**, Saros, J.E., Teisl, M.F. Assessing the ecological and economic vulnerability of Maine's drinking water resources to extreme precipitation events. Maine Sustainability and Water Conference, Augusta, Maine. March 31, 2015

2014 **Warner, K.A.**, Strock, K.E.D., Teisl, M.F., Saros, J.E. Ecological and ecological vulnerability of Maine drinking water resources to increased frequency of extreme storm

events. 22nd Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 17-18, 2014

2013 **Warner, K.A.**, Saros, J.E., Simon, K.S. Nitrogen Subsidies in Glacial Meltwater: Implications for High Elevation Aquatic Chains. 21st Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 22-23, 2013

2013 **Warner, K.A.**, Saros, J.E., Simon, K.S. Nitrogen Subsidies in Glacial Meltwater: Implications for High Elevation Aquatic Chains. U.S. American Society of Limnology and Oceanography Meeting. New Orleans, Louisiana. February 17-22, 2013

2012 **Warner, K.A.**, Saros, J.E. Effects of nitrogen enrichment from glaciers on food web interactions in alpine lakes. 20th Annual Harold W. Borns, Jr. Symposium. University of Maine, Orono, Maine. April 5-6, 2012

POSTER PRESENTATIONS

2017 **Warner, K.A.** Evaluating changes in epilimnion thickness and phytoplankton community structure from an extreme precipitation event, Global Lakes Ecological Observatory Network All Hands Meeting, New Paltz, NY, November 30, 2017

2017 **Warner, K.A.,** Saros, J.E., Teisl, M.F. Investigating the ecological response and economic vulnerability of Maine's drinking water resources to extreme precipitation events. Maine Sustainability and Water Conference, Augusta, Maine. March 30, 2017

2016 **Warner, K.A.,** Fowler, R.A., Gawley, W. Saros, J.E. Implications of rapid climate change on lake algal ecology in Acadia National Park, U.S.A. Acadia Science Symposium, Winter Harbor, ME. October 5, 2016

2015 **Warner, K.A.**, Teisl, M.F., Saros, J.E. Assessing the economic vulnerability of Maine's drinking water resources to extreme precipitation events. Maine Economics Conference, Bowdoin College, New Brunswick, Maine. May 2, 2015

2015 **Warner, K.A.**, Teisl, M.F., Saros, J.E. Assessing the vulnerability of Maine's drinking water resources to extreme precipitation events. University of Maine Freshwater Science Symposium, University of Maine, Orono, Maine. January 29, 2015

2014 **Warner, K.A.**, Strock, K.E.D., Teisl, M.F., Saros, J.E. Ecological and ecological vulnerability of Maine drinking water resources to increased frequency of extreme storm events. Joint Aquatic Sciences Meeting, Portland, Oregon. May 18-23, 2014

2013 **Warner, K.A.**, Saros, J.E., Simon, K.S. Nitrogen subsidies in glacial meltwater: Implications for diatom community structure in high elevation alpine aquatic chains. 22nd North American Diatom Symposium, Bar Harbor, Maine. August 13-17, 2013

PEER REVIEWED PUBLICATIONS

2018 **Warner, K.A.**, Saros, J.E. Variable responses of dissolved organic carbon to extreme precipitation events in boreal drinking water lakes. *Water Research, In Review.*

2018 Malik, H.I., **Warner, K.A.**, Saros, J.E. Comparison of season distribution patterns of Discostella stelligera and Lindavia bodanica in a boreal lake during two years with differing ice off timing. *Diatom Research, 33(1)*, 1-11, https://doi.org/10.1080/0269249X.2018.1464522.

2018 **Warner, K.A.**, Fowler, R.A., Northington, R.M., Malik, H.I., McCue, J., Saros, J.E. How does changing ice-out affect Arctic versus boreal lakes? A comparison using two years with ice-out that differed by more than three weeks. *Water, 10*, 78, doi:10.3390/w10010078.

2017 **Warner, K.A.**, Saros, J.E., Simon, K.S. Nitrogen subsidies in glacial meltwater: Implications for high elevation aquatic chains. *Water Resources Research*, *53*, https://doi.org/10.1002/2016WR020096.

REPORTS

2015 **Warner, K.A.** Teisl, M.F. Water Quality in Maine. Quarterly Report. Maine Development Foundation. July 22, 2015. Article was also featured in Bangor Daily News.

TEACHING EXPERIENCE

2011-2013 *Teaching Assistant*, 4 semesters, inquiry-based laboratory
BIO100 (Fall 2011, 2012), Introductory Biology, University of Maine
BIO200 (Spring 2012, 2013), Organismal Biology, University of Maine

FIELD EXPERIENCE

2018 Wyoming & Idaho - assisted with lake survey sampling and small scale experiments of remote lakes for US Forest Service
2017 Maine - monitoring, installation, and removal of high frequency water quality monitoring buoy in Jordan Pond
2016 Greenland - assisted with lake survey sampling and small scale experiments of remote lakes near Kangerlussuaq
2016 Maine - Completed storm sampling for Maine drinking water utilities and lakes in Acadia National Park, assisted with monitoring, installation, and removal of high frequency water quality monitoring buoy in Jordan Pond
2015 Maine - Completed lake survey sampling and storm sampling throughout the state of Maine; assisted with small scale in-lake experiments in Acadia National Park
2014 Peru - Completed lake survey sampling of high elevation, remote lakes and collected data for economic analysis of grasslands in the Quilcayhuanca Valley in the Cordillera Blanca
2014 Montana - lead field expedition for a fellow Ph.D. student in the Beartooth Mountains
2013 New York – lead sampling of remote long-term monitoring lakes in the Adirondaks
2013 Greenland - assisted with lake survey sampling of remote lakes near Kangerlussuaq
2012 Montana - completed fieldwork for master's research in the Beartooth Mountains
2012 Maine - completed bi-weekly sampling of Jordan Pond in Acadia National Park from May through November

OUTREACH ACTIVITIES

2016 Grant Reviewer for UMaine Graduate Student Government
2011-2015 CCI Science Day - Co-organize and facilitate the paleoecology unit of the Climate Change Institute's Science Day at the University of Maine each fall, includes educating high school students about aquatic ecology and climate change.
2015 University of Maine Open University - Provided tours of the University of Maine's Climate Change Institute to the public. September 30, 2015
2015 Movie Discussant for Glacial Balance in Human Dimensions of Climate Change Film Series sponsored by The University of Maine Anthropology Department, The Climate Change Institute, and Fogler Library. University of Maine, Orono, Maine. March 24, 2015

2015 Dinner with Maine Senators - Participated in meet and greet and dinner event with 60-80 newly elected Maine state legislators representing the Climate Change Institute and my research on Maine drinking water. January 14, 2015

2014 Participated in the Maine CLAS (Climate Adaptation and Sustainability) Conference. University of Maine, Orono, Maine. October 23, 2014

2014 Abrupt Climate Change Poster - Worked with A2C2 Cohort 2 IGERT peers to generate a poster designed for the general public defining Abrupt Climate Change.

2013 Member of the organizing committee for the 22nd North American Diatom Symposium

PROFESSIONAL DEVELOPMENT

2017 Participated in workshop titled, "R Programming and Communicating Science" at the Global Lake Ecological Observatory Network meeting, November 27, 2017

2016 Week long statistics course in R with Professor of Quantitative Paleoecology at Newcastle University, Dr. Steve Juggins. July 25-29, 2016

2016 Participated in workshop title, "Economics of Changing Coastal Resources: the Nexus of Food, Energy, and Water Systems held by the Northeastern Agricultural and Resource Economics Association. June 21-22, 2016

2015 Participated in Water Quality Economics Workshop held by the Northeastern Agricultural and Resource Economics Association. June 27-28, 2015

2014 Complex Physical, Biological, and Social System Modeling Course, New England Complex Systems Institute, Massachusetts Institute of Technology, Cambridge, Massachusetts. June 22-27, 2014

2013 Week long statistics course in R with Professor of Quantitative Paleoecology at Newcastle University, Dr. Steve Juggins. August 8-12, 2013

2012 Week-long course in held at the University of Maine on environmental policy and management with Associate Professor of Communication Studies and Affiliate Professor of Public Policy and Urban Affairs at Northeastern University, Dr. Matthew C. Nisbet. May 14-19, 2012

SKILLS AND CERTIFICATIONS

Field

- Extensive fieldwork throughout the state of Maine and other locations
- Ability to plan, prepare, execute, and lead research in the field, including remote locations with rugged terrain
- Proficient with use, care, and maintenance of small boats (up to 25 ft.) and outboard motors
- Experience deploying, maintaining, and removing high frequency buoys
- Lake and stream sampling, microcosm experimentation, lake coring
- Proficient withYSI EXO2 Sonde, Hydrolab DataSonde 5a, Biospherical Instruments Radiometer, vanDorn bottles, plankton nets, Secchi disc, OnsetHOBOs

Laboratory

- Chlorophyll *a* – Varian Cary UV-VIS Spectrophotometer
- Nutrient Analyses – Run on a Lachat Quikchem 8500
    - Nitrate (NO_3^-) & Total Nitrogen (TN) – Cadmium reduction method

    - Ammonium (NH4+) – Phenate method
    - Total Phosphorus (TP) – Persulfate digestion followed by the ascorbic acid method (also run using the ascorbic acid method on a Varian Cary UV-VIS Spectrophotometer)
    - Dissolved organic carbon (DOC) – Shimadzu Total Organic Carbon Analyzer
    - Quality/Absorbance Properties of DOC (i.e. $SUVA_{254}$, a^*_{320}, Spectral Slope) - Varian Cary UV-VIS Spectrophotometer
  - Phytoplankton Identification – Nikon TS-100 Inverted Microscope, FlowCam
  - Ash-free dry mass – Drying oven and muffle furnace
  - Anions and Cations – Flow-Injection Ion Chromotography

Software/Statistics

  - Proficient in R; SigmaPlot; ESRI ArcGIS; ERDAS; Google Earth; Microsoft Office Suite; Adobe Acrobat; Microsoft Windows and Mac OS X Operating Systems; YSI/Hydrolab/Hobo remote measurement sensors software

AWARDS AND CERTIFICATIONS

Harold W. Borns Symposium, University of Maine, 3rd Place Presentation, April 13-14, 2017
US National Mountain Running Championships, 2017
Gould Academy Athletic Hall of Fame
Melissa Mullikan Award for participation, leadership, and off field endeavors
Aliceann Wilbur Award for leadership, determination, and spirit
USCSA All American Skier: Giant Slalom and Combined – Slalom and Giant Slalom
4 years varsity soccer and alpine ski racing, Hobart and William Smith Colleges

Certified Wilderness First Responder
Level 100 Certified USSA Alpine Ski Coach

PROFESSIONAL AFFILIATIONS

Global Lake Ecological Observatory Network
American Society of Limnology and Oceanography
American Geophysical Union
Northeastern Agricultural and Resource Economics Association