

BAILEY C. NASH

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RESEARCH INTERESTS

I am interested in research that utilizes sedimentary proxies to reconstruct past climate. My research interests are motivated by a desire to use periods of past climate change to better understand current and future impacts of modern climate change. I have performed a variety of geophysical and geochemical analyses on marine, lacustrine and peatland sediments to reconstruct specific components of local and regional climate on centennial to millennial timescales.

EDUCATION

Northwestern University Present
Ph.D. Earth and Planetary Sciences

Iowa State University December 2017
B.S. Geology

Relevant Coursework

Biogeochemistry, Stable Isotopes in the Environment, Paleoclimatology, Micropaleontology, Quaternary and Glacial Geology, Hydrogeology, Groundwater Modeling, Surficial Processes, Geology Field Camp (based in Wyoming)

RESEARCH EXPERIENCE

Physical Science Technician, U.S. Geological Survey, Reston, VA Spring 2019-Fall 2021

Florence Bascom Geoscience Center

Supervisors: Dr. Miriam C. Jones; Dr. Jessica Rodysill

- Analyzed a 7-m long peat sediment core from Southcentral Alaska for: loss-on-ignition (LOI), bulk density, x-ray fluorescence (XRF), plant macrofossil assemblage, radiocarbon and lead-210 age dating, cellulose extraction (CUAM) from plant macrofossils, and oxygen isotopic analysis of plant cellulose
- Analyzed multiple lake sediment cores for: loss-on-ignition (LOI) and grain size analysis
- Interpreted data from peat sediment core analyses to reconstruct Holocene hydroclimate change

USGS/NAGT Summer Intern, U.S. Geological Survey, Reston, VA Summer 2017

Florence Bascom Geoscience Center

Advisor: Dr. Miriam C. Jones

- Determined the effects that plant type, part, and species in various peatland plant macrofossils have on oxygen isotope fractionation
- Contributed to the development of a new hydroclimate proxy that utilizes the extraction of cellulose from species-specific peatland plant macrofossils for oxygen isotopic analysis

Undergraduate Research Assistant, Iowa State University, Ames, IA Fall 2013-Fall 2017

Marine Sediments Lab, Department of Geological and Atmospheric Sciences

Advisor: Dr. Beth Caissie

- Analyzed Bering Sea MIS5 marine sediment cores for: microfossil assemblage and grain size analysis
- Contributed to the development of a sea ice duration proxy derived from a suite of 10 diatom species
- Helped maintain the lab space to improve workflow and lab productivity

PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Journal Articles

Jones, M.C., Anderson, L., Keller, K., **Nash, B.**, Littell, V., Wooller, M.J., Jolley, C. "An assessment of plant species differences on cellulose oxygen isotopes from two Kenai Peninsula, Alaska peatlands: Implications for hydroclimatic reconstructions" *Frontiers in Earth Science*, 2019. <https://doi.org/10.3389/feart.2019.00025>

Abstracts

Nash, B.C., Jones, M.C., Anderson, L., Berkelhammer, M. (2020) A Reconstruction of Southcentral Alaska Late Holocene Hydroclimate from Peatland Cellulose Oxygen Isotopes. American Geophysical Union Fall Meeting, San Francisco, CA (virtual), 7-11 December PP028. (poster).

Nash, B.C., Jones, M.C., Anderson, L., Keller, K., Littell, V. (2018) Oxygen isotopic analysis of peatland plant cellulose as a proxy for Holocene hydroclimate on the Kenai Peninsula, Alaska. Geological Society of America North-Central Section Meeting, Ames, IA, 16-17 April T2.9-1, 11 (poster).

Department talks

Iowa State University, Department seminar (brown bag)

November 2017

SKILLS & CERTIFICATIONS

Handling equipment: elemental analyzer, mass spectrometer with TC/EA interface, Malvern Mastersizer particle size analyzer, compound microscope, stereoscope, petrographic microscope, GeoTek multi-sensor core logger, mass balance, microbalance, freeze dryer, vacuum dryer, centrifuge, furnace, fume hood, dessicator, and sonicator

Field/Experimental: loss-on-ignition (LOI), bulk density analysis, macrofossil analysis, microfossil analysis, cellulose extraction of plant macrofossils (CUAM), acid digestion, elemental analysis, radiocarbon and lead-210 dating sample preparation, core splitting, core sampling, smear slides, isotope sample preparation, stable isotope analysis ($\delta^{18}\text{O}$, $\delta^{13}\text{C}$, δD), grain size analysis (sieving and laser diffraction grain size analyzer), and geologic mapping

Computer: Microsoft Office, Tilia, SigmaPlot, and Adobe Illustrator

TEACHING EXPERIENCE

Teaching Assistant, Introduction to Oceanography Fall 2017
Department of Geological and Atmospheric Sciences, Iowa State University

Lecture Assistant, Introduction to Geology Fall 2014
Department of Geological and Atmospheric Sciences, Iowa State University

HONORS & AWARDS

Iowa State University Morehouse Funding for Undergraduate Research Fall 2017
U.S. Geological Survey/National Association of Geoscience Teaching Cooperative Field Training Program Summer 2017
Frank H. and Ethel A. Spedding Scholarship Fall 2016
Smith Foundation Scholarship Spring 2016

OTHER EMPLOYMENT

Barista, Scenic Route Bakery, Des Moines, IA August 2018 – January 2019
Data Analyst, Wells Fargo, Des Moines, IA January 2018 – July 2018
Outdoor Recreation Program Leader, Iowa State University, Ames, IA January 2015 – May 2017
Waitress, Stomping Grounds Café, Ames, IA July 2015 – August 2016
Waitress, Jeff's Pizza Shop, Ames IA July 2014 – December 2014
Restaurant Worker, Subway, Ames, IA May 2014 – October 2014
Cashier, Hy-Vee Drugstore, Marshalltown, IA May 2010 – August 2013
Field Worker, Kevin Walters, Conrad, IA Summers 2009 – 2013

SERVICE & OUTREACH

Volunteer at the Collector's Corner exhibit, Science Center of Iowa 2018 – 2019
Volunteer at the Clothing Closet, Central Iowa Shelter Services 2018 – 2019
Climate change workshop co-leader, Ames Public Schools 2015 – 2017
Group leader at the Girls in Science Event, Science Center of Iowa 2015 – 2016
Co-organizer of National Campus Sustainability Day, Iowa State University 2013 – 2017
Leadership team member of The Green Umbrella (sustainability club), Iowa State University 2013 – 2018
Volunteer and recruitment officer for Next-Gen Climate, Ames, IA 2014 – 2015
Volunteer and member of Oxfam America (social justice club), Iowa State University 2013 – 2015
Volunteer and member of the Global Health and Aids Coalition, Iowa State University 2013 – 2015
Leadership team member of Hopeful Africa (educational club), Iowa State University 2013 – 2014