

Chelsea Clifford

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Education

Ph.D., Environment, 2018. Nicholas School of the Environment, Duke University, Durham, NC.

- Dissertation: Ecological Limitations and Potentials of Artificial Aquatic Systems. Advisor: James B. Heffernan. Defended May 4, 2018.
- Certificate of College Teaching, Duke Graduate School, Durham, NC.

B.A., Biology, 2010, magna cum laude. Carleton College. Northfield, Minnesota.

- Senior Comprehensive Exercise: Effects of cattle diet on greenhouse gas emissions via rumen microbial community. Advisor: Mark J. McKone. Presented March, 2010.

Professional Appointments

PhD Student, Duke University Nicholas School of the Environment, Durham, NC. 2013-2018

- designed, executed, analyzed, wrote, and presented environmental research studies
- attended and organized meetings and seminars
- mentored intern and more junior students

Teaching Assistant, Duke University Nicholas School of the Environment, Durham, NC. 2014-2016

- held office hours
- graded assignments
- conducted reading groups
- wrote exams
- ran discussions
- lectured

Data Analyst, Chesapeake Environmental Communications, Gloucester, VA. 2012-2013

- analyzed data for habitat assessment
- reviewed literature for environmental impact assessment

Communications Assistant, Chesapeake Environmental Communications, Gloucester, VA. 2011-2012

- contributed to tourism materials, textbook, newsletters, etc.
- built company website
- assisted with negotiations for Virginia Waterman's Association

Monitoring Assistant, The Nature Conservancy, Charlottesville, VA. 2011

- collected vegetation and hydrology data at wetland and stream restoration sites throughout Virginia
 - created informal plant identification guide
- Research Assistant III, MacArthur Agro-Ecology Research Center, Lake Placid, FL. 2011
- continued duties of Research Assistant II, below
 - maintained the lab
 - wrote articles and presented findings
- Research Assistant II, MacArthur Agro-Ecology Research Center, Lake Placid, FL. 2010
- monitored vegetation, hydrology, and water quality
 - processed samples in the lab
 - entered and organized data
 - maintained weather stations
- Teaching Assistant, Carleton College Biology, Northfield, MN. 2010
- assisted students in designing, executing, analyzing, and presenting lab exercises and group projects, all ecological studies
- Cole Student Naturalist, Carleton College Arboretum, Northfield, MN. 2008-2010
- observed and led tours of 800-acre nature restoration and remnants
 - wrote articles for school paper
- Seasonal Interpretive Ranger, Virginia Department of Conservation and Recreation, Surry, VA. 2009
- led interpretive programs on cultural and natural history
 - helped design and run junior rangers program
 - designed new programming
 - served as sweep for canoe tours
 - sold tickets to festival
 - re-organized interpretive office
- Lab Aide, White Mountain Research Center, Bishop, CA. 2008
- sorted invertebrate samples
 - identified invertebrates to order
 - assisted with field work
 - executed independent study

Publications

- Clifford, C.C., Holmquist, J.G., Voss, K., Schmidt Gengenbach, J., and Heffernan, J.B. “Urban ditches and natural creeks house similar invertebrate communities in a minimally developed California watershed.” (*in prep.*) 2019

Clifford, C.C., Heffernan, J.B. "North Carolina Coastal Plain ditch types support distinct hydrophytic communities." (*Submitted.*) 2019

Clifford, C.C., Heffernan, J.B. "Artificial aquatic systems." MDPI. *Water* 2018, 10(8), 1096; <https://doi.org/10.3390/w10081096>. 2018

Presentations

Clifford, C.C. "Ditches as ecosystems." Oklahoma State University Biology Department. Norman, OK. Invited Talk. 24 Oct 2018

Clifford, C.C., Heffernan, J.B. "Similar processes explain water quality in artificial and natural U.S. lakes. Society for Freshwater Science Annual Meeting. Society for Freshwater Science. Detroit, MI. 24 May 2018

Clifford, C.C., Heffernan, J.B. "North Carolina Coastal Plain ditch types support distinct hydrophytic communities." Society for Freshwater Science Annual Meeting. Society for Freshwater Science. Raleigh, NC. 8 Jun. 2017

Clifford, C.C., Heffernan, J.B. "Cultural biases limit ecosystem services provided by ditches and connected ecosystems." 2017 AWRA Spring Specialty Conference: Connecting the Dots: The Emerging Science of Aquatic System Connectivity. American Water Resources Association. Snowbird, UT. 2 May 2017

Clifford, C.C., Felson, A.J. "Introduction to the Earth Stewardship Initiative demonstration projects." Novel Ecosystems in the Anthropocene. Ecological Society of America. Fort Lauderdale, FL. 12 Aug. 2016

Clifford, C.C., J.B. Heffernan. "What drives wetland structure in ditches?" Novel Ecosystems in the Anthropocene. Ecological Society of America. Fort Lauderdale, FL. 10 Aug. 2016

Clifford, C.C., J.B. Heffernan. "Ditch types host different plant communities with similar wetland indicator statuses." 2016

- North Carolina Wetlands Symposium. Duke University. Durham, NC. 4 Mar. 2016
- Freshwater in the North Carolina Coastal Plain: Understanding and Preparing for 21st Century Challenges. North Carolina State University Water Resources Research Institute. New Bern, NC. 16 Feb. 2016

Clifford, C.C. "Anthropogenic ecosystems have conservation potential." Joint Ecology / Marine Lab Symposium. Beaufort, NC. 14 Nov. 2015

Clifford, C.C., J.G. Holmquist, J. Schmidt Gengenbach, J.B. Heffernan. "Ecosystem artificiality does not impact aquatic communities." Ecological Science at the Frontier. Ecological Society of America. Baltimore, MD. 13 Aug. 2015

Clifford, C.C., J. B. Heffernan. "Artificial aquatic systems." Connections in Ecology. Duke University. Beaufort, NC. 17 Apr. 2015

Clifford, C.C., J.G. Holmquist, J. Schmidt Gengenbach, J.B. Heffernan. "Artificial vs. natural streams: an invertebrate case study from Bishop, California." Poster. 2014

- Joint Aquatic Sciences Meeting. Portland, OR. May 22, 2014
 - Ecology Across Scales. Duke University. Durham, NC. Mar. 21, 2014
 - Water Resources Research Institute Annual Conference. NCSU. Raleigh, NC. Mar. 19, 2014
- Clifford, C.C., E.H. Boughton, P.J. Bohlen, P. Quintana-Ascencio, H. Swain. Mar. 27, 2011
 “Florida ranch wetland plant community response to increased water.” Poster.
 Southeastern Ecology and Evolution Conference. Auburn University.

Honors/Fellowships

Anthropocene Farm Fellowship, The Kenan Institute for Ethics	2018
Duke University Wetland Center Graduate Student Research Support Grant	2017
Earth Stewardship Research Fellowship, Earth Stewardship Initiative	2014
Graduate Research Fellowship, National Science Foundation	2013
Kolenkow-Reitz Fellowship, Carleton College	2009-2010

Institutional Service

Social Media Editor, Duke Women in Science and Engineering	2014-2018
Sci-Fi Book Club Coordinator, Duke Women in Science and Engineering	2016-2018
Environment Representative, Nicholas PhD Advocacy Council	2016-2017
Founder, Duke Nature and People	2015-2016
Coordinator, Nicholas School Graduate Afternoon Seminar	2015-2016
Coordinator, Duke River Center Chalk Talks	2015

Community Service

Scientist, Science Research Education Network Triangle	2014-2018
Scientist, Durham County Environmental Field Day	2017
Judge, North Carolina Student Academy of Sciences	2013-2017
Volunteer steward, Friends of the Mountain-to-Sea Trail	2014-2016
STEM Days volunteer, Museum of Life and Science	2016
Duke STEM/MAT network	2016
Scientist, NC Science Festival Invite-a-Scientist	2014-2015
Volunteer steward, Ellerbe Creek Watershed Association	2013-2015
Mentor, Durham Women and Math	2013-2014
Committee Member, Gloucester Blueways	2012-2013
Naturalist, Kids Kayak and Conservation Camp	2012-2013

Naturalist, Beaverdam Parks Spring Festival	2013
Geologist, Girl Scout Math and Science Day	2010
Volunteer steward, Carleton College Arbor	2006-2009
Volunteer trail maintainer, California Backcountry Horsemen	2008

Certifications

Virginia DGIF Boater Education	2012
Virginia Master Naturalist	2012
PADI Open Water Diver	2008

References

- Jim Heffernan**, Assistant Professor of Ecosystem Ecology and Ecohydrology, Duke University, james.heffernan@duke.edu, 919-681-4193
- Dean Urban**, Professor of Landscape Ecology, Duke University, deanu@duke.edu, 919-684-6999
- Dan Richter**, Professor of Soils and Forest Ecology, Duke University, drichter@duke.edu, 919-613-8031