

Christopher D. Heckel

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Education

- April 2015 Doctor of Philosophy in Evolution and Ecology, University of Pittsburgh.
The influence of indirect effects of large herbivores on the life history and population dynamics of an unpalatable forest herb species.
Advisor: Susan Kalisz, Professor of Biology
- December 2004 Master of Science in Biology, Georgia Southern University.
Impacts of Exotic Invasive Vines on the Ecology and Reproduction of the Endangered Trillium reliquum.
Advisor: Lissa M. Leege, Associate Professor of Biology
- May 1999 Bachelor of Science, Hillsdale College
Major: Biology Minor: Chemistry

Employment

- 2019-present Assistant Professor of Biology, Hillsdale College, Hillsdale, MI
- 2009-2019 Upper School Science Instructor, Hillsdale Academy, Hillsdale, MI
- 2004-2009 Graduate Assistant, University of Pittsburgh, Department of Biological Sciences, Pittsburgh, PA; Student in Doctoral Program
- 2002-2004 Graduate Assistant, Georgia Southern University, Department of Biology, Statesboro, GA; Student in Master's Program
- 1999-2002 Quality Assurance Inspector/Sanitation Supervisor, ConAgra Foods Quincy Frank Plant, Quincy, MI

Publications

- 2020 L. Bialic-Murphy*, Heckel, C.D.*, R. M. McElderry, and S. Kalisz. Deer Indirectly Alter the Reproductive Strategy and Operational Sex Ratio of an Unpalatable Forest Perennial. *The American Naturalist* 195(1): 56-69.
**these authors contributed equally to this work*
- 2017 Heckel, C.D. and S. Kalisz. Life history trait divergence among populations of a non-palatable species reveals strong non-trophic indirect effects of an abundant herbivore. *Oikos*. 126(4):604-613.
- 2015 Heckel, C.D. The influence of indirect effects of large herbivores on the life history and population dynamics of an unpalatable forest herb species. PhD diss. University of Pittsburgh.

- 2010 Heckel, C.D., N.A. Bourg, W.J. McShea and S. Kalisz. Nonconsumptive effects of a generalist ungulate herbivore drive decline of unpalatable forest herbs. *Ecology* 91(2):319-326.
- 2009 Brogan, W.R, A.N. Hale, C.D. Heckel, J. Hua, A. Montesinos, A.R. Rohde, H.M. Shaffery, A.B. Stoler, M. Wolfe, T.-L. Ashman, and W.P. Carson. Review of “Positive Interactions and Interdependence in Plant Communities” by R.M. Callaway, 2007. *Plant Science Bulletin* 55: 125-126.
- 2007 Heckel, C.D. and L.M. Leege. Life history and reproductive biology of the endangered *Trillium reliquum*. *Plant Ecology* 189:49-57.
- 2005 Heckel, C.D. Impacts of Exotic Invasive Vines on the Ecology and Reproduction of the Endangered *Trillium reliquum*. Master’s Thesis, Georgia Southern University.
- 2004 Heckel, C.D. and L.M. Leege. Impacts of exotic invasive vines on a population of the endangered *Trillium reliquum*. *Georgia Journal of Science*. 62(1):35-36.
- 2001 Miller, R.R. Jr., C.D. Heckel, W.J. Koss, S.L. Montague, and A.L. Greenman. Ethanol- and nicotine-induced membrane changes in embryonic and neonatal chick brains. *Comp Biochem Physiol C Toxicol Pharmacol*. 130(2):163-78.

Teaching Experience

- 2019-present Hillsdale College, Hillsdale, MI
Assistant Professor of Biology
 Teach introductory course in evolution and organismal biology for biology majors, general biology for non-majors, and all plant science courses (botany, plant ecology, plant physiology, and Michigan flora).
- 2018-2019 Hillsdale College, Hillsdale, MI
Lecturer in Biology
 Teach courses: Evolution and Biological Diversity & Plant Physiology. I am responsible for presentation of lecture materials and evaluation of students’ comprehension. Also responsible for preparation of laboratory exercises covering algae, plants, and fungi.
- 2009-2019 Hillsdale Academy, Hillsdale, MI.
 2006-2007 Head of Sciences, Instructor of Biology and Chemistry
 Teach general biology, general chemistry, and advanced biology to 9th, 11th, and 12th grade students at private school run by Hillsdale College. Teach life and earth sciences to 7th graders. Oversee development of science curriculum for K-12. Lead teacher for senior science capstones, advise students that participate in regional science fair, and administer Marsden Prize in Science, an annual cash award given to seniors who demonstrate outstanding science research skills.
- Spring 2017 Hillsdale College, Hillsdale, MI.
Instructor for Collegiate Scholars Program
 Taught a course titled “Viewing Nature: Philosophy and Science in the Enlightenment and After”. Course explored the various ways we see nature

through science, art, literature, and politics. Can nature be reduced to groups of organisms and materials to be measured and catalogued or is nature something that exists as a whole and must be sensed to be known? This exploration was primarily achieved through study of the life of Alexander von Humboldt.

Teaching Assistantships

2005-2009

University of Pittsburgh

- Intro. Biology Lab II
- Ecology Lab
- Microbiology Lab II
- Genetics

Used laboratory experiments to teach undergraduates basics of molecular biology, ecological theory, microbiological lab techniques, and genetics. Lab courses focused on hypothesis formation and testing and written presentation of results. Genetics was taught in a recitation session emphasizing problems that were solved in groups and discussed at the chalkboard.

2002-2004

Georgia Southern University – Lab sections taught

- General Biology
- Environmental Biology
- Evolution and Ecology

Responsible for presentation of lab topics, guiding students through lab exercises, and all grading for the course. I was the first graduate student ever allowed to teach the Evolution and Ecology Lab.

Guest Lectures

- Plant Biology (Pitt, 2008)
 - Emerging issues in plant biology – Overabundant deer.
- Population Biology (Pitt, 2008)
 - Life history and demography.
- Biology of Plants (GSU 2004)
 - Plant population demography and dynamics.

Research Grants Awarded

March 2008	Sigma Xi Grant-in-Aid of Research (\$975.00)
March 2008	Arthur and Barbara Pape Award of the Pittsburgh Foundation (\$1000)
March 2007	G. Murray McKinley Research Fund of the Pittsburgh Foundation (\$2200)
March 2006	G. Murray McKinley Research Fund of the Pittsburgh Foundation (\$1900)
January 2006-08	Botany in Action Fellowship from Phipps Conservatory (\$3000 annually)
March 2005	G. Murray McKinley Research Fund of the Pittsburgh Foundation (\$1826)
January 2004	Sigma Xi Grant-in-Aid of Research (\$400.00)
January 2004	Georgia Botanical Society Marie Mellinger Field Botany Research Grant (\$445.00)
November 2003	GSU College of Graduate Studies Graduate Student Professional Development Travel Fund (\$450.00)
April 2003	Garden Club of America Catherine H. Beattie Fellowship (\$3100.00)
March 2003	GSU College of Graduate Studies Graduate Student Professional Development Research Fund (\$450.00)
October 2002	GSU College of Science and Technology Academic Excellence Research Grant (\$250)

Honors

2009	1 st place Graduate student talk. Pitt Arts and Sciences Grad Expo, Pittsburgh, PA.
2006	Pisum Prize for Outstanding Poster Presentation at Pitt BioScience Fall Retreat

2004-2005	University of Pittsburgh Graduate Student Fellowship
March 2004	Best Graduate Student Presentation in Biology at 81 st Annual Meeting of the Georgia Academy of Science, Berry College, Mount Berry, GA
1999	Brooks Award for Outstanding Presentation at Tri-Beta District convention

Service

2005-present	Peer reviewer for <i>Molecular Ecology</i> (2005), <i>Acta Oecologica</i> (2005), <i>Plant Ecology</i> (2007), <i>J. Applied Vegetation Science</i> (2007), <i>American Journal of Botany</i> (2015), <i>Botany</i> (2017), <i>Ecosystems</i> (2017)
2017-present	Upper school service club advisor for Hillsdale Academy
2010-2015	Trustee – Village of Allen, MI. Served on Allen Village council.
2008	Chair of graduate student invited speaker committee for E&E group (Pitt)

Professional Memberships

Current	American Society of Naturalists, Evolutionary Demography Society, Michigan Botanical Society, Wildflower Association of Michigan
Past	Ecological Society of America (2008-2010), Botanical Society of America (2006-2010), B.O.G.S. (Biology Organization of Graduate Students) at GSU (2002-2004), Georgia Entomological Society (2003-2004), Beta Beta Beta Biology Honors Society (1998-2004)

Research Presentations

March 2015	N.L. Brouwer, A.N. Hale, C.D. Heckel, R.B. Spigler, D. Burke & S. Kalisz Experimental evidence links altered species interactions to native plant decline: Demographic consequences & physiological mechanisms. BES Annual Symposium focused on Demography Beyond the Population, Sheffield England.
March 2011	Heckel, C.D. Assessing the consequence of non-consumptive effects of herbivores for unpalatable plant population dynamics. 2009 Pitt Arts and Sciences Grad Expo, Pittsburgh, PA.
August 2008	Heckel, C.D and S. Kalisz. Indirect effects of abundant deer drive unbrowsed plant species decline in temperate forests. Paper presented at 93 rd Annual Meeting of the Ecological Society of America held in Albuquerque, NM.
March 2009	Heckel, C.D. Generalist herbivores drive unbrowsed species decline: Collateral damage of abundant ungulate herbivores. 2009 Pitt Arts and Sciences Grad Expo, Pittsburgh, PA.
August 2008	Heckel, C.D and S. Kalisz. Generalist herbivores drive unpalatable species decline: Collateral damage of abundant ungulate browsers. Poster presented at 92 nd Annual Meeting of the Ecological Society of America held in Milwaukee, WI.
July 2008	Heckel, C.D. Sex allocation of a gender changing forest herb in variable environments. McKinley Summer Seminar Series, Linesville, PA.
January 2008	Heckel, C.D. Overabundant deer cause decline of the non-palatable forest species, Jack-in-the-Pulpit. Phipps Conservatory and Botanical Garden Botany Education Weekend, Pittsburgh, PA.

- September 2007 Heckel, C.D. Overabundant deer and their impacts on a non-palatable understory herb in western PA forests. Presentation given at meeting of Western Pennsylvania Botanical Society. Carlow College, Pittsburgh, PA.
- January 2007 Heckel, C.D. Population effects of deer on unpalatable forest herbs: experimental studies with *Arisaema triphyllum*. Phipps Conservatory and Botanical Garden Botany Education Weekend, Pittsburgh, PA.
- September 2006 Heckel, C.D. and S. Kalisz. Do overabundant deer destabilize populations of plants that they do not browse? A case study with *Jack-in-the-pulpit*. University of Pittsburgh Biological Science Department Fall Retreat Poster Competition, Linesville, PA.
- July 2006 Heckel, C.D. Gender switching and factors affecting sex-ratios in populations of *Arisaema triphyllum*. McKinley Summer Seminar Series, Linesville, PA.
- March 2006 Heckel, C.D. Male biased population sex-ratios of *Arisaema triphyllum* University of Pittsburgh Ecology and Evolution Seminar Series, Pittsburgh, PA.
- July 2005 Heckel, C.D. Changes in forest herb sex-ratios and seed disperser communities associated with the presence of white-tailed deer. McKinley Summer Seminar Series, Linesville, PA.
- March 2005 Kalisz, S., T.M. Knight, J. Dunn, C.D. Heckel*, T. Strazisar, L. Smith, and J. Davis. Recipe for invasive spread: Venison with garlic mustard. Pittsburgh Invasive Plant Management Symposium, Chatham College, Pittsburgh, PA.
*Denotes presenter
- February 2005 Heckel, C.D. Impacts of exotic invasive vines on the demography of the endangered *Trillium reliquum*. University of Pittsburgh Ecology and Evolution Seminar Series, Pittsburgh, PA.
- August 2004 Heckel, C.D. Impacts of Exotic Invasive Vines on the Ecology and Reproduction of the Endangered *Trillium reliquum*. Georgia Southern University Departmental Seminar Series, Statesboro, GA.
- March 2004 Heckel, C.D. and Leege, L.M. Impacts of two invasive vine species on the population dynamics of the endangered *Trillium reliquum*. Georgia Academy of Sciences Annual Meetings, Berry College, GA.
- March 2004 Heckel, C.D. and Leege, L.M. Impacts of two invasive vine species on the population dynamics of the endangered *Trillium reliquum*. 1st Annual Southeastern Evolution and Ecology Conference, Atlanta, GA.
- November 2003 Heckel, C.D. and L.M. Leege. Impacts of exotic invasive vines on a population of the endangered *Trillium reliquum*. (Poster) Invasive Plants in Managed and Natural Ecosystems Conference in conjunction with the 7th International Conference on the Ecology and Management of Alien

Plant Species, Fort Lauderdale, FL.

April 2003 Heckel, C.D. and A. Harvey. Effects of anaesthesia on red imported fire ants, *Solenopsis invicta*. (Poster) GSU Graduate Student Appreciation Week, Statesboro, GA.

April 2003 Heckel, C.D. and A. Harvey. Effects of anaesthesia on red imported fire ants, *Solenopsis invicta*. (Poster) 2003 Meeting of the Georgia Entomological Society, Jekyll Island, GA.