

# Hannah M. Carroll

Department of Ecology, Evolution, and Organismal Biology, Iowa State University

## *Curriculum Vitae*

---

✉ [hannah.carroll@paleoeco.org](mailto:hannah.carroll@paleoeco.org) ☎ 515-991-4058 📞 hannahcarroll 🐦 hmcarro 🆔 0000-0003-3343-3358

---

## Education

**PhD Candidate, Ecology and Evolutionary Biology** 2012—present  
**Co-major: Environmental Science**

Iowa State University, Ames

Dissertation: “Late Quaternary Paleocology of the North American Midcontinent”

Advisors: Dr. Lynn G. Clark and Dr. Alan D. Wanamaker

**Bachelor of Science, Environmental Science** 2008

University of Washington, Tacoma

Thesis: “Evaluating Conditions in In-Situ Mesocosms”

Advisor: Dr. Bonnie J. Becker

## Teaching

*Indicates redevelopment or co-redevelopment of existing course*

**Indicates development of new course**

### Iowa State University, Ames

Teaching Assistant - Biol 312L: General Ecology Laboratory, field and laboratory components 2018—2019

Teaching Assistant - Biol 212L: Principles of Biology Laboratory II 2019

Instructor - EnSci 490: Independent Study 2014—2018

Instructor - **EnSci 203: Exploration of Environmental Science** 2014—2018

Instructor - *EnSci 202: Exploration of Environmental Issues* 2013—2017

Instructor - **EnSci 204X: Applied Exploration of Environmental Science I** 2015—2017

Instructor - **EnSci 205X: Applied Exploration of Environmental Science II** 2016—2017

Instructor - Biol 486xw: Aquatic Ecology Online 2016

Teaching Assistant - Biol 394: Study Abroad: Maya Mountains & Calabash Caye,  
international field course 2015

Teaching Assistant - Biol 486xw: Aquatic Ecology Online 2013—2015

Instructor - *Biol 486L: Aquatic Ecology Laboratory*, field and laboratory components 2013

### University of Washington, Tacoma

Undergraduate Teaching Assistant - TESC 442: Marine Ecology, field course 2008

## Grants

**Total = \$21,091**

Iowa State University Environmental Science Program Professional Development Grant	2019
Awarded for travel to the American Geophysical Union annual meeting \$200	
Iowa State University Department of Ecology, Evolution, and Organismal Biology,	2019
Harry and Audrey Finch Scholarship (Finch Funds Award),	
<i>A high-resolution, multiproxy record of climate, vegetation, and fire history at the southern limit of the temperate tallgrass prairie, USA</i>	
Awarded for travel to the American Geophysical Union annual meeting \$1,000	
Iowa State University Graduate and Professional Student Senate Professional Advancement Grant	2019
Awarded for travel to Botany 2019 \$200	
Iowa State University Department of Ecology, Evolution, and Organismal Biology	2019
PAG funds matching. Awarded for travel to Botany 2019 \$100	
Geological Society of America Graduate Student Research Grant,	2019
<i>Paleoecology of the Tallgrass Prairie-Ozark Forest Ecotone</i> \$2,500	
Geological Society of America Graduate Student Research Grant,	2018
<i>Late Quaternary Paleoecology of the Tallgrass Prairie-Ozark Forest Ecotone</i> \$2,500	
Iowa State University Department of Ecology, Evolution, and Organismal Biology,	2016
Harry and Audrey Finch Scholarship (Finch Funds Award),	
<i>Paleoecological Investigation of the Tallgrass Prairie-Ozark Forest Ecotone</i> \$1,500	
Iowa State University Department of Ecology, Evolution, and Organismal Biology,	2016
Lois Tiffany Scholarship Award, <i>Holocene Paleoecology of the Midwestern United States</i> \$750	
Iowa State University Department of Ecology, Evolution, and Organismal Biology,	2015
Harry and Audrey Finch Scholarship (Finch Funds Award),	
<i>Paleoecology of the bamboo thickets of eastern Bolivia</i> \$2,000	
Iowa State University College of Liberal Arts and Sciences Curriculum Development Grant,	2014
awarded to redevelop Biol 488 - <i>Identification of Aquatic Organisms Online Course</i> . \$1,000	
Association for the Sciences of Limnology and Oceanography (ASLO) Student Travel Award \$500	2014
<b>Significant contributor</b> , Downing, J.A., C. Filstrup, and C. Williams. \$5,790	
<i>Twin Lakes, Iowa, Diagnostic and Feasibility Study</i>	2013
Amount shown awarded by Iowa Department of Natural Resources for paleolimnological study of Twin Lakes, Iowa. Total award \$209,854	
<b>Significant contributor</b> , Downing, J.A., C. Filstrup, and C. Williams. \$3,051	
<i>Silver Lake, Iowa, Diagnostic and Feasibility Study</i>	2013
Amount shown awarded by Iowa Department of Natural Resources for paleolimnological study of Silver Lake, Iowa. Total award \$210,086	

## Manuscripts Under Revision or Review

**Carroll, H.M.**, D.D. Houston, S. Ankerstjerne, and A.D. Wanamaker, Jr. Using light stable isotopes to assess stream food web ecology in a general ecology laboratory course. Under revision at Journal of Biological Education.

## Manuscripts in Preparation

**Carroll, H.M.**, L.G. Clark, A.D. Wanamaker, and B.J. Wilsey. In prep. Pollen of ragweed (*Ambrosia spp.*) and sagebrush (*Artemisia spp.*) can distinguish between vegetation types at broad spatial scales. Target: Ecology. Anticipated submission: December 2019.

Cox, M., **H.M. Carroll**, T. Gallaher, H.T. Horner, P.C. Klahs, and L.G. Clark. In prep. Mature grass (Poaceae) root anatomy: A phylogenetic survey and potential functional correlations. Target: American Journal of Botany. Anticipated submission: January 2020.

## Technical Reports

- Significant contributor**, Municipal separate storm sewer system 2017 annual report.  
Department of Environmental Health and Safety and Facilities Planning and Management.  
Iowa State University.
- Significant contributor**, Municipal separate storm sewer system 2016 annual report.  
Department of Environmental Health and Safety and Facilities Planning and Management.  
Iowa State University.
- Downing, J.A., C.T. Filstrup, D.L. Kendall, L. Whitehouse, and **H. Carroll**. 2016. A diagnostic–feasibility study for the restoration of Silver Lake, Palo Alto County. Iowa State University Limnology Laboratory and Iowa Department of Natural Resources.
- Downing, J.A., C.T. Filstrup, D.L. Kendall, L. Whitehouse, and **H. Carroll**. 2015. A diagnostic–feasibility study for the restoration of North and South Twin Lakes. Iowa State University Limnology Laboratory and Iowa Department of Natural Resources.
- Significant contributor**, Municipal separate storm sewer system 2015 annual report.  
Department of Environmental Health and Safety and Facilities Planning and Management.  
Iowa State University.
- Significant contributor**, Municipal separate storm sewer system 2014 annual report.  
Department of Environmental Health and Safety and Facilities Planning and Management.  
Iowa State University.
- Significant contributor**, Municipal separate storm sewer system 2013 annual report.  
Department of Environmental Health and Safety and Facilities Planning and Management.  
Iowa State University.
- Norris, J.G., I.E. Fraser, and **H. Julich**. 2012. Underwater Videographic Survey of Submerged Aquatic Vegetation in Sequim Bay, WA, August 2011. Report to Hansi Halls, Environmental Planning Manager, Jamestown S’Klallam Tribe, Sequim, WA.
- Norris, J.G., I.E. Fraser, and **H. Julich**. 2011. Defining fish use of subtidal vegetated habitats of the Elwha and comparative shorelines. Report to Cathy Lear, Clallam County Planning Biologist, Port Angeles, Washington.
- Schanz, A., **H. Julich**, L. Ferrier, and H. Berry. 2010. Eelgrass Stressor-Response Project: Report 2007—2008. Nearshore Habitat Program. Washington Department of Natural Resources, Olympia, WA.

## Awards and Honors

- |   |      |
|---|------|
| Iowa State University Professional and Scientific Team Cytation Award                               | 2017 |
| Presented to the members of the ISU Stormwater Management Committee.                                |      |
| This award honors a team that: 1) has performed above and beyond the call of duty,                  |      |
| 2) has done something extraordinarily well, and   |      |
| 3) has acted in such a way as to make a significant impact on the institution within the past year. |      |
| Iowa State University Teaching Excellence Award   | 2016 |
| This award honors the top 10% of graduate students at ISU for outstanding teaching,                 |      |
| as evaluated by their academic departments.   |      |
| Participant, {GeoChronR} Workshop   | 2016 |
| Competitive–entry 3–day workshop hosted at Northern Arizona University                              |      |
| in time–uncertain data analysis using the GeoChron package for R.                                   |      |
| NSF-funded; travel, room and board, and workshop entry expenses paid.                               |      |
| Organizers: Nick McKay, Julien Emile-Geay   |      |

## Service

- |   |           |
|---|-----------|
| Volunteer - Letters to a Pre-Scientist penpal program                 | 2019      |
| Graduate Student Representative - ISU Stormwater Management Committee | 2014—2018 |

Curriculum Committee Representative , Department of Ecology, Evolution, and Organismal Biology Graduate Student Organization	2017—2018
Skype a Scientist, two high school classrooms	2018
Certified Volunteer - IOWATER volunteer water quality monitoring program	2014—2017
President - Environmental Science Graduate Student Organization	2014—2015
Graduate Student Representative - Plant or Microbial Processes Faculty Search Committee	2014—2015
Volunteer Judge - Eco Day, Nevada Middle School	2015
Volunteer Judge - Des Moines Public Schools Science Fair	2014—2015
Graduate Student Representative - EEOB external review panel	2014
Volunteer Judge - Iowa State Science and Technology Fair	2014
Volunteer Judge - Introduction to Environmental Issues Final Projects	2014
Workshop Leader - <i>All About Mussels</i> workshop for fifth grade students	2014
Social Outreach and Safety Chair - Environmental Science Graduate Student Organization	2013—2014
Volunteer - Iowa Children's Water Festival	2013

## Invited Talks and Guest Lectures

Carroll, H. <i>Spatial data wrangling in R</i> . Demonstration for LunchinatioRS: an R-focused lunch seminar. Iowa State University, Ames	2019
Carroll, H. <i>New Solutions for Old Problems: The Power of Big Data in Late Quaternary Paleoecology</i> . Departmental seminar. University of Washington, Tacoma	2018
Carroll, H. <i>Stream Health and Ecology</i> . Invited guest lecture with field component. Biology 211 - Introductory Biology for Nonmajors. Iowa State University, Ames	2018
Carroll, H. <i>Water Quality on the Iowa State University Campus</i> . National Pollutant Discharge Elimination System Stakeholders Meeting. Iowa State University, Ames	2016
Carroll, H. <i>Lake Eutrophication and Land Use</i> . Departmental seminar. University of Wisconsin, Stout, Menomonie	2015

## Presentations and Posters

- Carroll, H.**, A.D. Wanamaker, L.G. Clark, B.J. Wilsey. 2019. *Ambrosia and Artemisia pollen can distinguish between vegetation types at broad spatial scales*. Botany 2019 Meeting, Tucson, AZ
- Carroll, H.**, L.G. Clark, B.E. Caissie, and A.D. Wanamaker. 2019. *Late Quaternary vegetation dynamics at the southern limit of the temperate tallgrass prairie*. Environmental Science Graduate Student Symposium, Ames, IA
- Carroll, H.**, L.G. Clark, and A.D. Wanamaker. 2018. *Preparation of a phytolith reference collection for the study of late Quaternary paleoecology in Missouri*. Environmental Science Graduate Student Symposium, Ames, IA
- Carroll, H.**, 2018. *Late Quaternary paleoecology of the North American midcontinent*. Iowa State University Department of Ecology, Evolution, and Organismal Biology Three Minute Thesis Competition, Ames, IA
- Carroll, H.**, L.G. Clark, and A.D. Wanamaker. 2017. *Tracking Holocene vegetation change in the tallgrass prairie region: the power of big data in paleoecology*. Environmental Science Graduate Student Symposium, Ames, IA
- Carroll, H.**, C.T. Filstrup, and J.A. Downing. 2016. *Comparative palynology of two agriculturally eutrophic lakes* Environmental Science Graduate Student Symposium, Ames, IA
- Carroll, H.** and J.A. Downing. 2015. *Water quality declines and diversity loss in an agriculturally eutrophic landscape* Environmental Science Graduate Student Symposium, Ames, IA
- Carroll, H.** and J.A. Downing. 2015. *Paleolimnological analysis of Iowa's changing landscapes* Graduate Research in Evolutionary Biology and Ecology symposium, Ames, IA
- Julich, H.** and J.A. Downing. 2014. *Two hundred years of landscape change: Consequences for East Okoboji Lake, Iowa*. Association for the Sciences of Limnology and Oceanography Meeting, Portland, OR.
- Julich, H.** and J.A. Downing. 2014. *Use of palynological techniques to reconstruct macrophyte loss and*

- multiple stable states in a eutrophic lake*. Graduate Research in Evolutionary Biology and Ecology symposium, Ames, IA
- Julich, H.** and J.A. Downing. 2013. *Use of palynological techniques to reconstruct macrophyte loss and multiple stable states in a eutrophic lake*. Association for the Sciences of Limnology and Oceanography Meeting, New Orleans, LA
- Julich, H.** and B.J. Becker. 2008. *An evaluation of conditions in situ mesocosms* Western Society of Naturalists Meeting, Vancouver, BC, Canada
- Julich, H.** and B.J. Becker. 2008. *In situ culturing of larval sand dollars, Dendraster excentricus, in Friday Harbor, Washington*. University of Washington Tacoma Environmental Research Symposium, Tacoma, WA
- Julich, H.** and B.J. Becker. 2008. *In situ culturing of larval sand dollars, Dendraster excentricus, in Friday Harbor, Washington*. UW Undergraduate Research Symposium, Seattle, WA
- Julich, H.** and B.J. Becker. 2007. *In situ culturing of larval sand dollars, Dendraster excentricus, in Friday Harbor, Washington*. Western Society of Naturalists Meeting, Ventura, CA

## Mentorship

[22 total; includes 13 women and 5 students from traditionally underrepresented demographics in STEM]

### Iowa State University, Ames

Jacqueline Galang, Alejand Hernandez-Delgado, Juan-Carlos Mungaray, Juan Perez, Kathryn Holmes, Logan Crees, Lindsay Mack, Josiah Ihnen, Marlyssa Crow, Nicole Stout, Shelby Poole, Samuel Freestone, Emily Martin (Honors), Eric Tagatz, Megan Koppenhafer, Connor Nicholas, Molly Zelinskas, Molli Wienhold, Mariah Mahaney, Sarah Leichty (Honors), William Tony Manriquez

### University of Washington, Tacoma

Lindsay McCormick

## Interviews in the Popular or University Press

Iowa State University Department of Ecology, Evolution, and Organismal Biology. Departmental Spotlight. "Introducing environmental science to a growing number of undergraduates." September 2017

Visions Magazine (Iowa State University Alumni Association). "Three Billion Years: The Evolution of a State." November 2016

Environmental Monitor. "Future scientists get real-world skills in Iowa State water quality monitoring courses." March 5, 2014

<http://www.fondriest.com/news/future-scientists-get-real-world-skills-iowa-state-water-quality-monitoring-courses.htm>

Iowa State Daily. "ISU students to monitor campus impact on water." February 28, 2014

[http://www.iowastatedaily.com/news/article\\_01050a06-9fe2-11e3-9d48-001a4bcf887a.html](http://www.iowastatedaily.com/news/article_01050a06-9fe2-11e3-9d48-001a4bcf887a.html)

Ames Tribune. "ISU students study campus impact on waterways." February 25, 2014

<http://www.amestrib.com/news/ames-and-story-county/isu-students-study-campus-impact-waterways>

Iowa State University News Service. "Iowa State students will check water quality on campus this semester." February 19, 2014

<http://www.news.iastate.edu/news/2014/02/19/watertesting2014>

Iowa State Daily. "Carolyn Hoskinson makes first appearance in Iowa, speaks out about underground leakage." November 19, 2013