

Curriculum Vitae – Christopher S. Angell, PhD

Evolutionary Ecologist and Science Educator
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Education

Doctor of Philosophy in Biology 2021
University of Ottawa, Ottawa, Ontario
Dissertation: “Plasticity of senescence in the antler fly (*Protopiophila litigata*)”

Bachelor of Arts in Biology 2015
Earlham College, Richmond, Indiana
College Honors and Departmental Honors
Minor in Music

Academic & Professional Appointments

2025–Present Visiting Assistant Professor of Biology, Earlham College
2021–2025 Biology Laboratory and Stockroom Manager, Earlham College
2022–2023 Faculty Co-leader, New Zealand Semester Program, Earlham College
2021 Collections Consultant, Joseph Moore Museum, Earlham College
2016–2021 Graduate Researcher & Teaching Assistant, University of Ottawa
2016 Assistant Director, Camp Dark Waters
2016 Environmental Educator, Riverbend Environmental Education Center
2015 Program Director, Camp Dark Waters

Research Themes

Plasticity, Life History, and Fitness – My research uses both lab and field studies of invertebrates to investigate sources of plastic trait variation, especially in life history traits such as body size, development, longevity, and reproductive output. I consider these traits in their ecological context to understand how they affect individual fitness, either positively or negatively.

Non-genetic Inheritance – Various forms of non-genetic inheritance, including so-called “maternal effects,” are well documented, but their evolutionary significance has often been underestimated. My research utilizes the rapid life cycles of small invertebrates, such as flies and water fleas, to investigate how factors such as parental age or environment influences the traits and fitness of their offspring.

Insect Biodiversity & Systematics – I use both museum specimens and community science data to study the diversity and distribution of insects, the most diverse Class of animals on Earth. As a complement to this research area, I am passionate about public outreach and education (both in person and online) to foster the appreciation of the insect diversity that surrounds us, which often goes unnoticed.

Publications

In Preparation

1. **Angell CS**, Rochefort S, and Libby P. Taxonomic and geographic inventory of Nearctic Piophilidae (Diptera) with descriptions of four new species.

In Review

2. **Angell CS**, Nivrose T, and Shah S. Strain-specific thermal acclimation, but little evidence of transgenerational plasticity, in an asexual crustacean. *EcoEvoRxiv* preprint: <https://doi.org/10.32942/X2PM01> [In review at *Marine and Freshwater Behaviour and Physiology*.]

Peer Reviewed Articles

1. **Angell CS** and Barnd BD. 2025. *Heleomyza captiosa* (Diptera: Heleomyzidae) newly reported from the Nearctic region, with an updated key to Nearctic *Heleomyza* and similar *Scoliocentra*. *The Canadian Entomologist* 157: e28.
2. **Angell CS** and Rundle HD. 2025. Shed antlers as a larval environment: antler quality and adult performance of wild *Protopiophila litigata* (Diptera: Piophilidae). *The Canadian Entomologist* 156: e12.
3. **Angell CS**, Gaimari SD, and Woźnica AJ. 2024. New records of three introduced Eurasian heleomyzid flies (Diptera: Heleomyzidae) in western North America. *The Canadian Entomologist* 156: e16.
4. Giordani G, Tuccia F, Martín-Vega D, **Angell CS**, Pradelli J, and Vanin S. 2023. Morphological and molecular characterization of puparia of Piophilidae species of forensic relevance. *Medical and Veterinary Entomology* 37: 339-358.
5. **Angell CS**, Janacek R, and Rundle HD. 2022. Maternal and paternal age effects on male antler flies: a field experiment. *American Naturalist* 199: 436-442.
6. **Angell CS**, Oudin MJ, Rode NO, Mautz BJ, Bonduriansky R, and Rundle HD. 2020. Development time mediates the effect of larval diet on ageing and mating success of male antler flies in the wild. *Proceedings of the Royal Society B* 287: 20201876.
7. López-García J, **Angell C**, and Martín-Vega D. 2020. Wing morphometrics for the identification of Nearctic and Palaearctic Piophilidae (Diptera) of forensic relevance. *Forensic Science International* 309: 110192.
8. Charpentier CL, **Angell CS**, Duffy PI, and Cohen JH. 2020. Natural variations in estuarine fish, fish odor, and zooplankton photobehavior. *Marine and Freshwater Behaviour and Physiology* 52: 265-282.
9. **Angell CS**, Curtis S, Ryckenbusch A, and Rundle HD. 2020. Epicuticular compounds of *Protopiophila litigata* (Diptera: Piophilidae): identification and sexual selection across two years in the wild. *Annals of the Entomological Society of America* 113: 40-49.
10. **Angell CS** and Cook O. 2019. Natural variation in the growth and development of *Protopiophila litigata* (Diptera: Piophilidae) developing in three moose (Artiodactyla: Cervidae) antlers. *The Canadian Entomologist* 151: 531-536.
11. Yun L, Chen PJ, Kwok KE, **Angell CS**, Rundle HD, and Agrawal AF. 2018. Competition for mates and the improvement of nonsexual fitness. *Proceedings of the National Academy of Sciences* 115: 6762-6767.
12. Iverson JB, Klondaris H, **Angell CS**, and Tori WP. 2016. Olfaction as a cue for nest-site choice in turtles. *Chelonian Conservation and Biology* 15: 206-213.

Nomenclatural Notes

1. **Angell CS.** 2025. Establishing the publication date of Strobl's "Die Dipteren von Steiermark. II. Theil" to improve stability of genus-group names in Scathophagidae (Diptera). *Sherbornia* 9: 1-6.
2. **Angell CS** and Šifner F. 2024. Review and re-proposal of family-group names used for tribes of Scathophagidae (Diptera). In: Evenhuis N & Pape T (eds.), *Systema Dipteriorum Nomenclatural Notes. IV. Bishop Museum Occasional Papers* 157: 23-28.
3. **Angell CS.** 2024. The type species of *Heteromyiella* Hendel, 1910 (Diptera: Heleomyzidae). In: Evenhuis N & Pape T (eds.), *Systema Dipteriorum Nomenclatural Notes. IV. Bishop Museum Occasional Papers* 157: 7-9.
4. **Angell CS.** 2023. Replacement names for two Asian species of *Psila* Meigen, 1803, *sensu lato* (Diptera, Psilidae). *Bionomina* 34: 45-50.

Other Publications

1. **Angell C.** 2022. Guide to Suilliinae north of Mexico. *Field/Photo ID for Flies*. <https://sites.google.com/view/flyguide/species-guides/heleomyzidae/guide-to-suilliinae?authuser=0>
2. **Angell C.** 2019. One moose's trash is another fly's treasure: antler flies teach biologists about love, life, and death. *The Raven: A Natural and Cultural History Digest* 60: 1-4. https://www.algonquinpark.on.ca/pdf/raven_2019_2.pdf

Presentations

1. Durkan C*, Rogers M*, Taylor G*, and **Angell C.** 2025. Beat the heat: How does heat acclimation affect *Daphnia magna* over three generations? Epic Expo, Earlham College, Richmond, Indiana.
2. **Angell CS***. 2025. Runs in the family? Searching for parental effects in insects and crustaceans. Invited talk. Biology Colloquium, Earlham College, Richmond, Indiana.
3. Nivrose T*, Hale T*, and **Angell CS.** 2024. In hot water: Do current and parental environments impact heat tolerance in three Eurasian populations of a freshwater crustacean? Poster. Epic Expo, Earlham College, Richmond, Indiana.
4. **Angell CS***, Janacek R, and Rundle HD. 2022. Maternal and paternal age effects on male antler flies: a field experiment. Oral presentation. Evolution Meeting, Cleveland, Ohio.
5. **Angell CS***. 2022. Plasticity of aging in the antler fly, a remarkable Canadian insect. Invited talk. Biology Colloquium, Earlham College, Richmond, Indiana.
6. **Angell CS*** and Rundle HD. 2020. The effect of diet on aging and lifespan of female and male antler flies (*Protopiophila litigata*). Oral presentation. Entomological Society of America Virtual Meeting.
7. **Angell CS*** and Rundle HD. 2020. The effects of maternal and paternal age on the fitness of antler flies in the wild: a field experiment. Oral presentation. American Society of Naturalists Stand-Alone Meeting, Pacific Grove, California.
8. López-García J*, **Angell C.**, and Martín-Vega D. 2019. Use of geometric morphometrics for the identification of Piophilidae (Diptera) species of forensic importance. Poster. European Association for Forensic Entomology Meeting, Bordeaux, France.
9. **Angell CS***, Curtis S, Ryckenbusch A, and Rundle HD. 2019. Natural perfume: how do antler flies choose their mates? Poster. Ottawa-Carleton Institute of Biology Symposium, Ottawa, Ontario.

10. Yun L, Chen PJ, Kwok KE, **Angell CS**, Rundle HD*, and Agrawal AF. 2018. Competition for mates and the improvement of nonsexual fitness. Oral presentation. II Joint Congress on Evolutionary Biology, Montpellier, France.
 11. **Angell CS***, Oudin MJ, Rode NO, Mautz BS, Bonduriansky R, and Rundle HD. 2018. Diet and development time both affect mortality and mating rate, but not lifetime mating success, of a short-lived fly in the wild. Oral presentation. Canadian Society for Ecology and Evolution Annual Meeting, Guelph, Ontario.
 12. **Angell CS***, Oudin MJ, Rode NO, Mautz BS, Bonduriansky R, and Rundle HD. 2018. Diet and development time both affect mortality and mating rate, but not lifetime mating success, in wild male flies. Poster. Ottawa-Carleton Institute of Biology Symposium, Ottawa, Ontario.
 13. Charpentier CL*, **Angell CS**, Duffy PI, and Cohen JH. 2016. Quantifying fish kairomones in estuarine water: is kairomone-induced alteration of zooplankton photobehavior a laboratory artifact? Oral presentation. American Society of Limnology and Oceanography Summer Meeting, Santa Fe, California.
 14. Klondaris H* and **Angell C**. 2014. Olfaction as a cue for nest site choice in painted turtles (*Chrysemys picta*) in Nebraska. Oral presentation. Butler Undergraduate Research Conference, Indianapolis, Indiana.
- *presenting co-author

Press

1. Hunter G. 2019. Why you should let fallen antlers lie: they're still in use. *Cottage Life*. <https://cottagelife.com/outdoors/why-you-should-let-fallen-antlers-lie-theyre-still-in-use/>
2. Spears T. 2017. Science of Spring: when I see an antler fly. *Ottawa Citizen*. <https://ottawacitizen.com/news/local-news/science-of-spring-when-i-see-an-antler-fly>

Research Funding

Summer Collaborative Research (\$9,450.00), Earlham College	2025
Summer Collaborative Research (\$6,600.00), Earlham College	2024

Scientific Mentorship

Undergraduate Research Assistants

2025	Colleen Durkan, Max Rogers, & Gretchen Taylor, Summer Collaborative Research, Earlham College
2025	Shubhangini Shah & Tertulle Nivrose, Biology Student Research, Earlham College
2024	Tertulle Nivrose & Tamsyn Hale, Summer Collaborative Research, Earlham College
2019	Tracey Yu, Research Assistant, McMaster University
2018	Rebecca Janacek, Co-op Research Assistant, University of Ottawa
2017	Olivia Cook, Co-op Research Assistant, University of Ottawa

Undergraduate Thesis Advising

2019 Shaina Gabriel, Honours Thesis, University of Ottawa

“Zoom-a-Review” peer review mentorship program

2020 Raunak Sen, PhD student (Cornell), *Behavioral Ecology* journal

Courses Taught

Earlham College

Ecological Biology (BIOL 111) – Introductory ecology course serving majors and non-majors. Topics covered include natural selection, life tables, ecological succession, nutrient cycling, and conservation.

Entomology (BIOL 362) – Upper-level course focusing on insect diversity, anatomy, evolution, ecology, and behavior.

Biology Student Research (BIOL 486) – Collaborative project with two upper-year undergraduate students to prepare a manuscript for submission to a journal based on summer research data.

University of Ottawa

Introduction to Organismal Biology, laboratory (BIO 1130) – Survey of the evidence for, and the fundamentals underlying the evolution of biological diversity.

Ecology, laboratory (BIO 2129) – Introduction to the study of ecological systems. Field and lab exercises expose students to basic principles in ecological study design, experimentation and sampling, data analysis, and illustrate important ecological processes.

Genetics, laboratory (BIO 2133) – Introduction to Mendel's laws of inheritance; application of Mendelian analysis to problems in genetics including: gene mapping and linkage, molecular genetics, bioinformatics and population genetics. Laboratory session includes experiments to illustrate genetic principles, tutorial and problem sessions.

Animal Form and Function, laboratory (BIO 2135) – Introduction to main animal groups, their life cycles, development, body plan, functional organization including metabolism and their adaptation to different environments.

Invertebrate Zoology, laboratory (BIO 3334) – Advanced survey of invertebrate diversity, anatomy, physiology, and life cycles.

Guest Lectures

“Nonhuman Charisma and Invertebrate Conservation,” Environment, Science, and Sustainability (2024-25, Earlham College)

“What’s So Cool About Insects?” Biological Diversity (2022-25, Earlham College)

“Eukaryotes & Protists,” Biological Diversity (2024-25, Earlham College)

“Sustainable Futures: A Dialog with *Half-Earth Socialism*,” Environment, Society, and Sustainability (2023-24, Earlham College)

“Collecting, Identifying and Preparing Insect Specimens,” Great Discoveries in Natural History Collections (2022, 2025, Earlham College)

“Reptile Diversity and the Evolution of Amniotes,” Biological Diversity (2024, Earlham College)

“Natural Perfume: How Do Antler Flies Choose Mates?” Animal Behavior (2021, Earlham College)

“Life History Evolution,” Evolutionary Ecology (2018-21, University of Ottawa), Evolutionary Biology (2021, Earlham College)

“Sexual Dimorphism,” Evolution of Sex (2020, Carleton University)

“Aging in Antler Flies,” Insect Biology (2020, Earlham College)

“Speciation,” Evolutionary Biology (2019, University of Ottawa)

Public Outreach

2022–2024 “Songs of the Night” Ecotour, Joseph Moore Museum, Richmond, Indiana
2020 Ask the Researcher virtual Q&A, Algonquin Wildlife Research Station
2020 Virtual classroom visit (grades 4-6), Ratner Montessori School, Pepper Pike, Ohio
2019 Article in *The Raven* natural history newsletter, Algonquin Provincial Park, Ontario
2017–2019 Meet the Researcher Day, Algonquin Provincial Park, Ontario
2017, 2019 Wildlife Research Night, Algonquin Provincial Park, Ontario
2017 Wildlife Research Weekend, Algonquin Provincial Park, Ontario

Awards and Scholarships

Doctoral thesis award nominee, University of Ottawa 2021
Phi Beta Kappa 2015
Lucy Moore Grave Marine Biology Award, Earlham College 2015
Presented to an Earlham junior or senior for the study of marine biology.
Owen and Fran Crisman Scholarship, Earlham College 2014–2015
Awarded to junior or senior social or life science majors with high academic achievement.
Presidential Honors Scholarship, Earlham College 2011–2015

Service and Leadership

Committees and Associations

2023–2025 Faculty Liaison, Staff Engagement and Advisory Committee, Earlham College
2022–2025 Biology Department representative, Scientific Equipment Fund, Earlham College
2021–2025 Animal Care Supervisor, Institutional Animal Care and Use Committee, Earlham College
2021 Member of hiring committee for Biology administrative assistant, Earlham College
2020–2021 Member of biology department student EDI committee, University of Ottawa
2018–2020 VP Finance, Biology Graduate Students Association, University of Ottawa
2017–2018 VP Internal, Biology Graduate Students Association, University of Ottawa

Peer Review

Zootaxa (3), The American Naturalist (2), Journal of Chemical Ecology (2), Entomological Science (2), Royal Society Open Science (1), Behavioral Ecology (1), Physiological Entomology (1), ZooKeys (1)

Other Service

2021–Present Curator, iNaturalist
2021–Present Contributing Editor, BugGuide.net