

CELIA D. HEIN

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EDUCATION

PhD - Ecology and Evolutionary Biology

December 2024

University of Toronto

Thesis Title: **Scale dependence in biodiversity patterns**

Principal Investigator: Helene Wagner

Bachelor of Science

December 2016

University of Wisconsin-Stevens Point

Double major in **Biology & Wildlife Ecology Research and Management**; Minor in **Spanish**

Cumulative grade point average: 4.00/4.00 (99th percentile) Dean's List with Highest Honors

PUBLICATIONS

1. Hein, C., Abdel Moniem, H. E., & Wagner, H. H. (2021). **Can We Compare Effect Size of Spatial Genetic Structure Between Studies and Species Using Moran Eigenvector Maps?**. *Frontiers in Ecology and Evolution*, 9, 107.
2. Hein, C. D., Marrec, R., & Wagner, H. H. (in preparation). **Scale dependence of bee species-landcover associations is pervasive and complex**. Submission to the *Journal of Landscape Ecology* planned for 2025.
3. Hein, C. D., Marrec, R., & Wagner, H. H. (in preparation). **Is scale of effect specific to species, landcover, or dependent on species traits?** Submission to *Oikos* planned for 2025.
4. Gjevori, J., Hein, C. D., & Wagner, H. H. (in preparation) **Is *Halictus confusus* (Seladonia) an obligately social species toward its northern range limit in Alberta, Canada?** Submission to the *Annals of the Entomological Society of America* planned for 2025.

TECHNICAL REPORTS

Hein, C. D. (2015) Observations on North American black tern (*Chlidonias niger surinamensis*) ecology in Wisconsin. Conservation management report for the internal use of the Wisconsin Department of Natural Resources.

PRESENTATIONS & OTHER PUBLICATIONS

1. **Scale of response is specific to species-landcover relationships in bees**
Invited seminar: Dept. Ecology and Agronomy, University of Picardie Jules Verne, France, 2024
Poster: Scandinavian Association for Pollinator Ecology Conference, Norway, 2024
2. **Variation in scale of response of bees depends on species and landcover in agroecosystem**
Presentation: Ecological Society of America Annual Conference, Portland, Oregon, 2023
3. **Scale dependent factors drive species distributions of bees in Alberta, Canada**
Presentation: North American International Association of Landscape Ecology, California, 2022
4. **Incorporating scale of response into community modelling of wild bees**
Presentation: University of Toronto Atwood Colloquium, Toronto, ON, 2022
5. **Can we compare the strength of spatial genetic structure for meta-analysis?**
Presentation: North American International Association of Landscape Ecology, Toronto, ON, 2021
6. **Wagner lab team collaborative research overview**

Presentation: Swiss Federal Institute for Forest, Snow, and Landscape Research; ETH Zurich, 2019

7. Simulated landscape genetics in the context of native bees

Poster: World International Association of Landscape Ecology, Milan, Italy, 2019

8. Landscape genetics and connectivity modelling of six native bees in agriculture

Poster: North American International Association of Landscape Ecology; Chicago, Illinois, 2018

North American Congress for Conservation Biology; Toronto, Ontario, 2018

Canadian Society for Ecology and Evolution; Guelf, Ontario, 2018

9. Project proposal on conservation genetics of native bees in agricultural Alberta, Canada

Presentation: Alberta Biodiversity Monitoring Institute Stakeholder Meeting

Alberta Biodiversity Monitoring Institute Board of Directors Meeting

10. Infection/co-infection prevalence in localized Central Wisconsin black-legged tick (*Ixodes scapularis*) population and micro-geographic variations.

Report: Caporale research lab. UWSP College of Letters Science, 2016

11. A rise in co-infection risk of tick-borne diseases in Schmeeckle Reserve, Wisconsin

Poster: National Wildlife Society Conference; Raleigh, North Carolina, 2016

UWSP College of Letters and Science Research Symposium, 2016

12. Impact of canine scent lure and human scent on detection of species by trail cameras in Mountain Zebra National Park, South Africa

Poster: UWSP College of Natural Resources Research Symposium, 2015

AWARDS & GRANTS

Doctoral Completion Award Grant	2023-2024
Graduate Student Travel Training Grant	2018, 2024
Graduate Student Conference Travel Grant	2018-2024
Office of the Vice Dean UTM Conference Travel Grant	2022-2023
University of Toronto Fellowship	2017-2022
Faculty of Arts and Science Funded Program Fellowship	2017-2022
School of Graduate Studies Program Level Fellowship	2017-2022
Department of Ecology and Evolutionary Biology Annual Award	2017-2022
First 1 st Author Paper Award	2021
Chancellor Leadership Award	2016
University of Wisconsin – Stevens Point Leadership Award	2015, 2016
Sentry Insurance Student Academic Leadership Scholarship	2016
WI Wildlife Federation - James Wareing Scholarship	2016
Safari Club International – Badgerland Chapter Scholarship	2016
Member of Phi Kappa Phi Honor Society	2015-2017
Semester Abroad Initiative Scholarship	2015
Jack and Marion Wilson Scholarship	2015
Fund for Wisconsin Scholars Grant	2014-2017
	February 2015

LEADERSHIP & MENTORSHIP

University of Toronto

Vice-President of Science Career Committee

2020-2021

Supervised four Work Study and ROP undergraduates on three separate projects

2018-2019

TEACHING & PROFESSIONAL EXPERIENCE

University of Toronto, Department of Biology

Postdoctoral Researcher

2025- present

- Performed connectivity and network analyses for applied landscape conservation in collaboration with the Alberta Biodiversity Monitoring Institute, Nature Conservancy Canada, and the Alberta Prairie Conservation Forum

Research Assistant

2017- 2024

- Conducted research from conception to completion in the fields of ecological data science, landscape genetics, landscape ecology, spatial statistics, and community ecology

Course Instructor & Teaching Assistant Roles

2017-2024

Biometrics I, Biometrics II, Ecology

- Using real data from published peer-reviewed case studies in the biology research, I walked students through step-by-step from experimental design to interpretation and application in lecture, exams, and tutorials (via R and Rstudio)
- Managed a large, relational database of course material and made it accessible to students (via Canvas)
- Supervised and managed a team of 5 teaching assistants
- Taught an intensive, in-person course on regression-based modelling (conceptual and applied) in RStudio
- Created and evaluated case study assignments, written reports, and oral presentations
- Trained and mentored new employees
- Managed a team's observational data collection, manipulation, basic statistical analysis, and experiment interpretation for a large citizen-science project

State Government of Wisconsin

Park Manager, Wisconsin Dane County Parks Department

2016 – 2017

- Maintained and managed park grounds.
- Interacted professionally with the public. Organized events. Maintained detailed records. Wrote incident reports. Accounted for large sums of cash money.
- Assisted Park Rangers with law enforcement.

Wildlife Ecologist Technician, Department of Natural Resources (WDNR)

2015

- Designed and conducted multiple surveys to assess populations and nest sites of black terns (*Chlidonias niger surinamensis*), which are endangered in Wisconsin, and wrote a technical report for internal use

University of Wisconsin – Stevens Point

2014

Field Teaching Assistant of Soil Inventory, College of Natural Resources

- Designed a Prepared lab and field equipment including GPS enabled handheld field computers for class in Soil Inventory Methods (Soils 360). Maintained field and laboratory equipment.
- Taught various parts of lectures as needed, with focus on plant identification.

Supplemental Instructor and Supplemental Instruction Mentor

2013-2016

- Prepared, scheduled, organized, and lead supplemental instruction sessions 3 per week for biology courses.
- Designed and lead activities to incorporate all different learning styles. Cultivated a safe, positive learning atmosphere.
- Logged attendance and kept detailed records. Attended class lectures. Mentored, observed, and evaluated colleagues.

Fox Road Compound, Columbus WI

Property Manager

2010-2012

- Consulted land owners on animal health and land use decisions.
- Assisted with basic building renovations, facility organization, maintenance, and cleaning.

Kurth Dairy Production, Columbus WI

Assistant Manager

2009-2013

- Supervised, milked, and fed over 200 dairy cattle in Grade A dairy facility.

- Operated heavy machinery daily.
- Assisted in recruiting, evaluating, and training new employees.

WORKSHOPS

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| • Oral Presentations for Non-Specialists | January 2025 |
| • Machine Learning in Python | July 2024 |
| • Artificial Neural Networks (Deep Learning) in Python | June 2024 |
| • Working with Jupyter on High Performance Computing Clusters | June 2024 |
| • Incorporating Indigenous Knowledge in Biological Research | July 2023 |
| • Intro to Structured Query Language (SQL) | July 2022 |
| • Research at Work: Science Policy 101; Transparency and Inclusion | May 2022 |
| • STATs Workshop (GLMMs, Bayesian, network analysis) | January 2022 |
| • Making Maps in R | December 2021 |
| • Google Earth Engine Workshop | April 2021 |
| • Equity, Inclusion, and Diversity | December 2020 |
| • Improving Presentations | November 2019 |
| • Bioinformatics for Ecologists | July 2018 |
| • R and Github: Reproducible Research | July 2018 |
| • Spatial Data in R | April 2018 |
| • Creative Problem Solving | August 2017 |
| • Conflict Resolution | November 2016 |
| • Leadership and Teamwork | |