

Christopher A. Halsch

Postdoctoral Associate
Binghamton University

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Research interests and areas of expertise

- Using large scale ecological datasets to quantify threats to biodiversity
- Data curation and analysis, emphasis on Bayesian approaches and machine learning
- Monitoring populations, including in rugged conditions (insects and other groups)

Professional experience and education

Binghamton University 2024 – Present
Postdoctoral associate

University of Nevada, Reno 2018 – 2023
Doctorate - *Ecology, Evolution, and Conservation Biology*
Advisor: Matthew L. Forister

University of California, Irvine 2011– 2015
Bachelor of Science – *Earth System Science*
Bachelor of Science – *Ecology and Evolution*

Publications (in reverse chronological order)

17. **Halsch, C.A.**, Shapiro, A.M., Forister, M.L., Grames, E.M. 2025. Shifting baselines in North America's longest-running butterfly monitoring program. *In review*.
16. Dittmore, C.M., Anderson, A., Code, A., Lenard, A., Douglas, M.R., **Halsch, C.A.**, Forister, M.L. 2025. Pesticide contamination of two urban areas has implications for insect conservation and green space management. *In review*.
15. Christensen, T., **Halsch, C.A.**, Dyer, L. Smilanich, A.M., Shapiro, A.M., Forister, M.L. 2025. Specialized flower visitation in montane butterflies is associated with positive population trajectories over time. *In review*.
14. Reis, G.A., Forister, M.L., **Halsch, C.A.**, Dittmore, C.M., Shapiro, A.M., Gompert, Z. 2025. Temporal occupancy distributions reveal diverse responses to climatic variation in montane butterflies. *In review*.
13. Foster E.M., Dombroskie J.J., **Halsch C.A.**, Powell T.H.Q., Grames E.M. 2025. Changes in phenology, voltinism and species presence over 135 years of moth community sampling. *In review*.
12. **Halsch, C.A.**, Elphick, C.S., Bahlai, C.A., Forister, M.L., Wagner, D.L., Ware, D.L., Grames, E.M. 2025. Meta-synthesis reveals interconnections among drivers of insect biodiversity loss. *Bioscience*. *In press*.

11. **Halsch, C.A.**, Shapiro, A.M., Thorne, J.H., Rodman, K.C., Parra, A., Dyer, L.A., Gompert, Z., Smilanich A.M., and Forister, M.L. 2024. Thirty-six years of butterflies, snow, and plant productivity reveal negative impacts of warmer winters and increased productivity on montane species. *Global Change Biology* e17044. doi: <https://doi.org/10.1111/gcb.17044>.
10. Forister, M.L., Grames, E.M., **Halsch, C.A.**, Burls, K.J., Carroll, C.F., Bell, K.L., Jahner, J.P., Bradford, T., Zhang, J., Cong, Q., Grishin, N.V., Glassberg, J., Shapiro, A.M., and Riecke, T.V. 2023. Assessing risk for butterflies in the context of climate change, demographic uncertainty, and heterogeneous data sources. *Ecological Monographs* 93: e1584. doi: [10.1002/ecm.1584](https://doi.org/10.1002/ecm.1584)
9. Forister M.L., Black S.H., Elphick C.S., Grames E.M., **Halsch C.A.**, Schultz C.B., Wagner, D.L. 2023. Insect monitoring programs tell us about what is left not what is already lost. *Conservation Letters* e12951. doi:[10.1111/conl.12951](https://doi.org/10.1111/conl.12951)
8. **Halsch, C.A.**, Zullo, D, J., and Forister, M.L. 2023. Additive and interactive pressures of anthropogenic stressors on an insect herbivore. *Proceedings of the Royal Academy B* 290: 2022243. doi:[10.1098/rspb.2022.2431](https://doi.org/10.1098/rspb.2022.2431)
7. **Halsch, C.A.**, Hoyle, S.M., Code, A., Fordyce, J.A., Forister, M.L. (2022) Milkweed plants bought at nurseries may expose monarch caterpillars to harmful pesticide residues. *Biological Conservation* 273: 109699. doi:[10.1016/j.biocon.2022.109699](https://doi.org/10.1016/j.biocon.2022.109699)
6. Forister, M.L., **Halsch, C.A.**, Nice, C.C., Fordyce, J.A., Dilts, T.E., Oliver, J.C., Prudic, K.L., Shapiro, A.M., Wilson, J.K., and Glassberg, J. 2021. Fewer butterflies seen by community scientists across the warming and drying landscapes of the American West. *Science* 371: 1042-1045. doi:[10.1126/science.abe5585](https://doi.org/10.1126/science.abe5585)
5. **Halsch, C.A.**, Shapiro, A.M., Fordyce, J.A., Nice, C.C., Thorne, J.H., Waetjen, D.P., and Forister, M.L. 2021. Insects and recent climate change. *Proceedings of the National Academy of Sciences* 118: e2002543117. doi:[10.1073/pnas.2002543117](https://doi.org/10.1073/pnas.2002543117)
4. **Halsch, C.A.**, Code, A., Hoyle, S.M., Fordyce, J.A., Baert, N., and Forister, M.L. 2020. Pesticide contamination of milkweeds across the agricultural, urban and open spaces of low elevation Northern California. *Frontiers in Ecology and Evolution*. doi:[10.3389/fevo.2020.00162](https://doi.org/10.3389/fevo.2020.00162)
3. **Halsch, C.A.**, Shapiro, A.M., Thorne, J.H., Waetjen, D.P., and Forister, M.L. 2020. A winner in the Anthropocene: changing host plant distribution explains geographic range expansion in the gulf fritillary butterfly. *Ecological Entomology*. doi:[10.1111/een.12845](https://doi.org/10.1111/een.12845)
2. Kimball, S., Long, J., Ludovise, S., Ta, P., Schmidt, K., **Halsch, C.A.**, and Magliano, K. 2019. Impacts of Competition and Herbivory on Native Plants in a Community-Engaged, Adaptively Managed Restoration Experiment. *Conservation Science and Practice*. doi:[10.1111/csp2.122](https://doi.org/10.1111/csp2.122)

1. Tamura, N., Lulow, M.E., **Halsch, C.A.**, Major, M.R., Balazs, K.R., Austin, P., Huxman, T.E., and Kimball, S. 2017. Effectiveness of seed sowing techniques for sloped restoration sites. *Restoration Ecology*. doi:10.1111/rec.12515

Grants, Scholarships, and Awards

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| College of Science Outstanding Graduate Assistant Award (\$500) | 2022 |
| USDA AFRI NIFA Predoctoral Fellowship (\$117,700) | 2022 |
| The Garden Club of America Centennial Pollinator Fellowship (\$2,500) | 2021 |
| Hitchcock Fellowship (\$13,300) | 2021 |
| Jerry and Betty Wilson Scholarship (\$4,000) | 2021 |
| Joan Mosenthal DeWind Award (\$5,000) | 2021 |
| Ron Leuschner Memorial Fund for Research on the Lepidoptera (\$500) | 2021 |
| Ben & Beatrice Edwards Biology Scholarship (\$1,200) | 2020 – 2021 |
| Outstanding Graduate Student Scholarship (\$500) | 2020 |
| Graduate Research Fellowship Program (Honorable Mention) | 2020 |

Teaching

BIOL 750 – Research Design Spring 2020, Spring 2021
 Developed lessons and led labs that introduced graduate students to R coding and statistical analysis for ecological data.

EECB 751 – Philosophy of Science Fall 2020
 Designed and implemented graduate course on the philosophy of science, with a focus on topics related to ecology, evolution, and conservation biology.

BIOL 437 – Entomology Spring 2019
 Organized and led labs on insect identification and taxonomy.

Crystal Cove Conservancy, Newport Beach, CA Spring 2016- Spring 2018
 Designed and implemented citizen science education programs for K-12 students in partnership with California State Parks and University of California Irvine researchers.

Presentations

Entomological Society of America. 2024. Halsch, C. A., Games, E. M. *Insect Decline RCN Symposium and Workshop. Symposium and workshop organizer.*

International Congress of Entomology. 2024. Halsch, C. A., Forister, M. L., Games, E. M. *Considering the risk of pesticide exposure across already stressed populations. Invited talk.*

Ecological Society of America. 2023. Halsch, C.A. *The direct and indirect effects of climate stressors on montane butterflies. Contributed talk.*

Butterfly conservation symposium. 2023. Halsch, C.A., Shapiro, A.M., Parra, A.S., Rodman, K.C., Thorne, J.H., Forister, M.L. *Direct and indirect effects of climate on montane butterflies. Plenary talk.*

Entomological Society of America Pacific Branch. 2023. Halsch, C.A. *Pesticide risk to butterflies in the western US.* **Invited talk.**

Tri-State Green Industry Conference. 2023. Halsch, C.A., Selvaggio, S., Code, A. *Rethinking Nursery Production Practices for Safe Pollinator Plants.* **Invited talk.**

Public outreach presentation, Cultivating healthy plants: An IPM webinar series. 2022. Halsch, C.A. *The state of butterflies in the western US.* **Invited talk.**

Public outreach presentation, Xerces Society for Invertebrate Conservation. 2022. Halsch, C.A. *Looking for pesticides in milkweeds sold in nurseries.* **Invited talk.**

International Congress of Entomology. 2022. Halsch, C. A., Forister, M. L., Grames, E. M., Burls, K. J., Carroll, C. F., Bell, K. L., Jahner, J. P., Bradford, T., Zhang, J., Cong, Q., Grishin, N. V., Glassberg, J., Shapiro, A. M., and Riecke, T. V. *Integrating heterogenous data sources to assess the status and risk of butterflies to Anthropogenic threats in the western United States.* **Symposium organizer.**

Entomological Society of America Pacific Branch. 2022. Halsch, C.A., Shapiro, A.M., Parra, A.S., Rodman, K.C., Thorne, J.H., Forister, M.L. *Separating the direct and indirect effects of climate change on butterflies in the Sierra Nevada, CA using remote sensing data.* **Invited talk.**

Public outreach presentation, Western Hummingbird Partnership. 2021. Halsch, C.A. *Contamination of Marginal Spaces and the Role of Pesticides in Butterfly Declines.* **Invited talk.**

Entomological Society of America. 2022. Halsch, C.A., Shapiro, A.M., Parra, A.S., Thorne, J.H., Forister, M.L. 2021. *Climate change and butterflies: Can we use long-term data to separate direct effects on individuals from plant-mediated indirect effects? *Winner, best student presentation**

Entomological Society of America. 2020. Halsch, C.A., Shapiro, A.M., Forister, M.L. *Understanding global change and butterflies with western North America's longest-running monitoring study.* **Invited talk.**

Entomological Society of America. 2019. Halsch, C.A., Shapiro, A.M., Forister, M.L. *An Expanding Fritness Landscape: Minimum Temperatures, Host Plant Distribution, and the Expansion of the Gulf Fritillary.* **Contributed poster.**

The Lepidopterist's Society. 2019. Halsch, C.A., Shapiro, A.M., Forister, M.L. *The Spatial and Temporal Story of the Expanding Gulf Fritillary Butterfly.* **Contributed talk.**

Public Outreach and Service

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| Co-founder – Nerd Nite, Reno, Community Engagement and Lecture Series | 2019-2023 |
| Organized monthly lecture series for large audiences where speakers present research | |
| Member – UNR EECB Colloquium Committee | 2019-2023 |
| Managed logistics for weekly graduate program lecture series | |

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| Member – UNR EECB Admissions Committee | 2022-2023 |
| Reviewed applications of potential graduate students for EECB program | |
| Member – UNR EECB Comprehensive Exam Committee | 2022-2023 |
| Wrote and reviewed questions with faculty for comprehensive exams | |
| Member – UNR EECB Party Committee | 2022-2023 |
| Organized social events for EECB graduate program | |
| Board member – Nevada Bugs and Butterflies | 2020-2022 |
| Consulted local invertebrate conservation and outreach non-profit | |
| President – UNR EECB Graduate Program | 2020-2021 |
| Oversaw student committees and collaborated with program director | |
| Member – UNR EECB Peer Review Committee | 2019-2020 |
| Reviewed manuscripts and grant applications for fellow graduate students | |
| President – Plant-Animal Interactions Club | 2018-2020 |
| Organized weekly meetings for discussion group on plant-animal interactions | |

Journal Reviews

Annals of the Entomological Society of America, Biodiversity and Conservation, Biological Conservation, Current Opinions in Insect Science, Diversity and Distributions, Ecological Applications, Ecological Entomology, Ecology, Ecology Letters, Ecosphere, Global Change Biology, Global Ecology and Biogeography, Journal of Biogeography, Journal of Insect Conservation, Journal of Pest Science, Landscape Ecology, PeerJ