Ari Grele
Arijg21@gmail.com

Research Experience

2025 - present: Postdoctoral fellow | Crall & Trowbridge labs, Entomology, UW – Madison:
Research on the role of pollinator network complexity on ecosystem resilience, intraspecific variation in floral chemistry, and plasticity in plant – pollinator interactions

2019 - 2025: PhD | Richards lab, EECB, University of Nevada, Reno:
Dissertation research investigating large scale drivers of semiochemical diversity, ecological roles of specialized nectar chemistry, and computer vision for automated insect monitoring

2017 - 2019: Research assistant | Thaler Lab, Entomology, Cornell University:
Assisted with insect bioassays and chemical assays, insect rearing, insect dissection and field assays of insect repellent and antifeedant semiochemicals.

2017 - 2019: Research assistant | Raguso Lab, Neurobiology and Behavior, Cornell University:
Assisted with data collection and behavioral analysis of recorded assays of multiple insect species.

Education

2019 - 2025: Ph.D; University of Nevada, Reno; Ecology, Evolution, and Conservation Biology, Department of Biology
Advisor: Dr. Lora Richards
Thesis: *"Pheromones, nectar, and computer vision: investigating large-scale patterns of chemodiversity.*

2015 - 2019: B.S; Cornell University; Entomology with distinction in research, Cum Laude.
Senior honors thesis: *Bioactive components of a predaceous stink bug aggregation pheromone on Colorado Potato Beetle feeding*

Research Interests

Insect chemical ecology & behavior
Plant-insect interactions & Pollination ecology
Computer vision & automated insect surveying

Research Skills

Technical skills: Wet lab, dry lab, & field research, experimental design
insect and plant rearing, insect behavioral assays in field and lab
insect dissection, vivisection, identification and preservation,
analytical chemistry & LC-MS

Computer skills: Fluency in R, Python, JAGS, GLSL, and GDscript
Machine learning and computer vision algorithms using Pytorch
Video analysis using B.O.R.I.S. software
Image analysis using M.I.P.A.R., ImageJ, and opencv software
Chemical analysis with Agilent MassHunter, XCMS and GNPS2

Statistical skills: Quantitative analysis using Frequentist and Bayseian methods

Publications and Presentations

L. Martinez, N. Aflitto, F. Macneill, **A. Grele,** J. Thaler. 2025. *A Predator Pheromone Increases Potato Yield Through Multiple Mechanisms Involving Plant and Prey Responses*. Journal of Economic Entomology

A. Grele, T. J. Massad, K. A. Uckele, L. Dyer, Y. Antonini, L. Braga, M. L. Forister, L. Sulca-Garro, M. Kato, and H. G. Lopez. 2023. *Intra and interspecific diversity in a tropical plant clade alter herbivory and ecosystem resilience*. eLife 12:RP86988.

T. J. Massad, A. R. Nascimento, D. Campos, W. Simbaña, H. G. Lopez, L. S. Garro, C. Lepesqueur, L. Richards, M. Forister, J. Stireman, E. Tepe, K. Uckele, L. Braga, T. Walla, A. Smilanich, **A. Grele**, and L. Dyer. 2023. *Variation in the strength of local and regional determinants of herbivory across the Neotropics*. Oikos e10218.

Z. Getman-Pickering, L., A. Campbell, N. Aflitto, **A. Grele**, J. K. Davis, and T. A. Ugine. 2020. *LeafByte: A mobile application that measures leaf area and herbivory quickly and accurately. Methods in Ecology and Evolution* 11:215–221.

A. Grele, L. Richards, 2025. *Not all pollinators are equal: Specialized nectar chemistry alters plant fitness by selectively modifying insect behavior*. Talk presented at the Hitchcock Center for Chemical Ecology Annual Symposium, Incline Village, NV.

A. Grele, L. Richards, 2024. *Nectar chemistry alters plant fitness by manipulating pollinators.* Talk presented at the annual meeting of the Entomological Society of America, Phoenix, AZ.

A. Grele, L. Richards, 2024. *Chemical signals and chemical noise – why plant defenses are more complex and pheromones are simpler in the tropics*. Talk presented at the 27th International Congress of Entomology, Kyoto, Japan.

A. Grele, L. Richards, 2024. *Intra- and interspecific variation in milkweed nectar chemistry*. Poster presented at the Hitchcock Center for Chemical Ecology Annual Symposium, Incline Village, NV.

A. Grele*, C. Mallon*, 2024. *Raman Spectroscopy at a Distance: A Tool for Ecological Research in the Field*. Talk presented at the Hitchcock Center for Chemical Ecology Annual Symposium, Incline Village, NV.
** Indicates co-presenters*

A. Grele, L. Richards, 2023. *Simulated herbivory increases plant fitness by altering floral traits and pollinator behavior*. Poster presented at the Plant – Herbivore Interactions Gordon Conference, Ventura, CA.

A. Grele, L. Richards, 2022. *Using machine learning to study pollination with high temporal and taxonomic resolution.* Poster presented at the annual meeting of the Entomological Society of America, Vancouver, BC.

A. Grele, N. Aflitto, J. Thaler, 2018. *Components of Podisus maculiventris Aggregation Pheromone Elicit Non-Consumptive Responses in Colorado Potato Beetles.* Poster presented at the annual meeting of the Entomological Society of America, Vancouver, BC.

Teaching experience

2023: Evolution (Biol 415 / 615) | University of Nevada, Reno;
One semester; Lead capstone course discussion sections introducing students to evolutionary concepts, application of evolutionary theory to conservation and human health, and science communication.

Research design (EECB 750) | University of Nevada, Reno;
One semester; Lead lab course introducing graduate students to coding in R, quantitative analysis, frequentist and Bayesian statistics, data preparation and presentation.

2019 - 2022: Principles of Biological Investigation (Biol 192) | University of Nevada, Reno;
Seven semesters; Lead lab course introducing students to biological concepts, experimental design, statistics and scientific writing.

2016: Insect Biology (Entom 2120) | Cornell University;
One semester; Assisted lab course teaching students insect biology, taxonomy, identification and preservation.

Organizations

2022 - 2024: Developer and computer vision lead for Limelight: Rainforest; XPRIZE: Rainforest finalist team: Research to develop machine learning models for the rapid quantification of biodiversity in tropical forests

2023 & 2024: Member of EECB graduate colloquium nominations committee: Solicit colloquium nominations from program members, act as point of contact for program members to facilitate the development of the semester colloquium calendar.

2016 - 2017: Vice President of Snodgrass and Wigglesworth, Undergraduate Entomology Club: Acted as stand in for president, organized club events, ensured club registration.

Awards and grants

<u>Research grants and fellowships</u>

University of Wisconsin – Madison, Distinguished Research Fellowship	$243,400	2025 - present
NSF Research Traineeship Program	$51,000	2024 - 2025
Hitchcock Graduate Student Fellowship	$14,000	2022
UNR Graduate School Research, Travel, and Materials Grant Program	$1,500	2020

<u>Travel grants</u>

CBI travel grant	$1,400	2024
UNR GSA travel award	$500	2024
UNR GSA travel award	$400	2024

UNR GSA travel award	$500	2023
UNR GSA international travel award	$750	2022
UNR GSA travel award	$500	2021

Awards

Member of Limelight: Rainforest; XPRIZE Rainforest first place award	$5,000,000	2024
Scott Chadwick graduate award	$1,400	2024
Member of Limelight: Rainforest; XPRIZE Rainforest finalist award	$333,000	2023
Outstanding TA Award	$500	2023

References

Dr. Lora Richards (Graduate advisor); Professor, University of Nevada, Reno, 101 Sarah Fleischmann Building, Reno, NV, 89557; Email: Lorar@unr.edu; phone: 775-784-6141

Dr. Lee Dyer (Committee member); Professor, University of Nevada, Reno, 141 Fleischmann Agriculture Building, Reno, NV, 89557; Email: ldyer@unr.edu; phone: 775-784-1360

Dr. Thomas Walla (Collaborator); Professor, Colorado Mesa University, 221C Wubben Hall and Science Center, Grand Junction, CO, 81501; Email: twalla@coloradomesa.edu; phone: 970-248-1146