Ari Grele

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**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**

Research grants and fellowships

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| 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 |

Travel grants

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| 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

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| 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