

Education

- 2019 - present:** Ph.D; University of Nevada, Reno; Ecology, Evolution, and Conservation Biology, Department of Biology
Advisor: Dr. Lora Richards
Thesis: *The role of specialized nectar chemistry in mediating species interactions*
- 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, and 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 and XCMS
- Statistical skills:** Quantitative analysis using Frequentist and Bayseian methods

Publications and Presentations

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.

Massad, T., 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.

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

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

Grele, A, Richards, L, 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.

Grele, A, Aflitto, N, Thaler, J. 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.

Research Experience

2019 - present: PhD candidate | Richards lab, EECB, University of Nevada, Reno:
Dissertation research investigating four major topics:

1. The role of plant traits in mediating herbivore - pollinator interactions.
2. Intra and interspecific variation in specialized metabolites in *Asclepias* spp.
3. The role of plant traits in driving pollinator behavior and pollination.
4. Computer vision techniques for automated insect observations.

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.

Teaching experience

2023: Evolution (Biol 415 / 615) | University of Nevada, Reno;
Led 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;
Led 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;
Led lab course introducing students to biological concepts, experimental design, statistics and scientific writing.

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

Organizations

- 2022 - present:** Developer and computer vision lead for Limelight: Rainforest; XPRIZE: Rainforest finalist team: Research to develop machine learning models for the rapid quantification of biodiversity at tropical sites
- 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

- 2024:** NSF Research Traineeship Program: Chemistry of biological interactions
University of Nevada, Reno, Hitchcock Center for Chemical Ecology
\$34,000
- 2023:** Member of Limelight: Rainforest; XPRIZE Rainforest finalist award
XPRIZE and Alana foundation
\$333,000
- Outstanding TA Award
University of Nevada, Reno, Department of Biology
\$500
- Travel award
University of Nevada, Reno, Graduate Student Association
\$500
- 2022:** Hitchcock Graduate Student Fellowship
University of Nevada, Reno, Hitchcock Center for Chemical Ecology
\$14,000
- International travel award
University of Nevada, Reno, Graduate Student Association
\$750
- 2021:** Travel award
University of Nevada, Reno, Graduate Student Association
\$500
- 2020:** Research, Travel, and Materials Grant Program
University of Nevada, Reno, Graduate Student Association
\$1550

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