

GRACE (GIGI) MELONE

Entomologist | Ecologist
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EDUCATION

University of Wisconsin, Madison
Graduate Research Assistant Fall 2021
Lab of Dr. James Crall
GPA: 4.00

University of California, Davis
Bachelor of Science with Honors Fall 2020
Major: Entomology
GPA: 3.66

University of Copenhagen
Visiting Student Department of Plant and Environmental Sciences Fall 2019
GPA: 4.00

RESEARCH EXPERIENCE

Williams Lab, UC Davis (<https://williamslab.ucdavis.edu/>)

Visiting Researcher

Spring 2022 to Present

- Designed and executed research to investigate the effects of simulated heat waves on *Osmia lignaria* survival and Heat shock protein (HSP70) expression

Crall Lab, University of Wisconsin, Madison (<https://www.crall-lab.com/>)

Graduate Research Assistant

Fall 2021 to Present

- Developed novel computer vision monitoring tools
- Studied the effect of heatwaves on *Bombus impatiens* thermoregulatory behavior
- Characterized thermal microclimate and insect visitation in *Malus sp.*
- Investigated the effects of wood ash on *Manduca sexta* larvae development and behavior

Vannette Lab, UC Davis (<https://vannettelab.faculty.ucdavis.edu/>)

Undergraduate Research Assistant

Summer 2020 to Summer 2021

- Reared *Bombus vosnesenskii* queen and microcolonies
- Investigated microbial ecology of *Bombus vosnesenskii*
- Studied the interaction of mycorrhizae and fungicides on plant health

Williams Lab, UC Davis (<https://williamslab.ucdavis.edu/>)

Undergraduate Independent Researcher

Spring 2018 to Summer 2021

- Designed and executed independent research to investigate the effects of simulated heat waves on *Osmia lignaria* larvae
- Analyzed the effects of pesticides (Neonicotinoids) and nutrition on *Osmia lignaria* behavior

Svensson Lab, Lund University (<https://www.biology.lu.se/glenn-svensson>) and Sigsgaard Lab, University of Copenhagen (https://plen.ku.dk/english/research/organismal_biology/aife/)

Visiting Independent Researcher

Fall 2019

- Investigated the effect of pesticide application on *Trifolium pratense* flower volatiles and *Achroia grisella* response to *Galleria mellonella* infested wax cakes

Sih Lab, UC Davis (<https://sihlab.wordpress.com/>)

Undergraduate Research Assistant

January to June 2018

- Studied the influence of behavioral variations on black and brown widow spider invasion success

PUBLICATIONS

- Stulligross, C., **Melone, G. G.**, Wang, L., & Williams, N. M. (2023). Sublethal behavioral impacts of resource limitation and insecticide exposure reinforce negative fitness outcomes for a solitary bee. *Science of The Total Environment*, 867, 161392.
<https://doi.org/10.1016/j.scitotenv.2023.161392>
- A. Easton-Calabria, J. Thuma, K. Cronin, **G. Melone**, M. Laskowski, M. Smith, C. Pasadyn, B. de Bivort, J. Crall. (2023). Colony size buffers interactions between neonicotinoid exposure and cold stress in bumble bees. *Proceedings of the Royal Society B*. **290**: 20230555.20230555
<http://doi.org/10.1098/rspb.2023.0555>
- **G Melone**, C Stulligross, N Williams. Heatwave Temperature, not Duration Increases Mortality and Delays Development in Solitary Bee Larvae (Megachilidae: Osmia). *Ecological Entomology*.
<https://doi.org/10.1111/een.13317>

PRESENTATIONS

Contributed

Annual Meetings of the Ecological Society of America, 2020. C Stulligross, **G Melone**, L Wang, N Williams. **Combined Pesticide and Resource Stressors Impair Wild Bee Reproduction and Behavior**

Annual Meetings of the Entomological Society of America, 2020. **G Melone**, C Stulligross, N Williams. **Heat Waves Increase Larval Mortality and Delay Development in the Solitary Bee *Osmia lignaria* (Hymenoptera: Megachilidae).**

Midwest Women in Science Conference, 2021. **G Melone**, C Stulligross, N Williams. **It's Getting Hot in Here: Native bee development and mortality in response to heatwave temperature and duration**

Gordon Research Conference: Plant-Herbivore Interactions, 2023. **G Melone**, J Prouse, J Crall. **When it All Comes Ashing Down: Caterpillars Avoid Wood Ash Contaminated Diet in Binary Choice Assays**

Center for Ecology and Evolution Spring Symposium, 2023. **G Melone**, A Tang, J Crall. **Gotta Fan 'Em All: Using Computer-Vision-Based Tracking to Understand the Impacts of Heatwaves on Thermoregulation in Bumblebees**

Ecological Society of America Conference, 2023. **G Melone**, M Smith, O Bernaeur, J Weissing, J Crall. **Using Computer Vision to Understand the Effects of Flowering Stage and Temperature on Insect Visitation in an Apple Orchard**

Society of Integrative and Comparative Biology, 2024. **G Melone**, A Tang, J Crall. **Gotta Fan 'Em All: Using Computer-Vision-Based Tracking to Understand the Impacts of Heatwaves on Thermoregulation in Bumblebees**

ACADEMIC HONORS AND AWARDS

- University of Wisconsin-Madison Integrative Biology Summer Research Grant, Summer 2024, \$6,020
- American Museum of Natural History Theodore Roosevelt Memorial Grant, April 2023, \$1,175
- National Science Foundation-Graduate Research Fellowship, March 2023, ~\$159,000
- University of Wisconsin-Madison Student Research Grants Competition, February 2023, \$1500
- University of Wisconsin Center for Integrated Agricultural Systems Mini-Grant, April 2022, \$2500.
- Michigan State University College of Natural Sciences Recruiting Fellowship, February 2021, *Declined*
- National Science Foundation-Graduate Research Fellowship Honorable Mention, Fall 2020
- College of Agricultural and Environmental Sciences Dean's Honor List, Fall Quarter 2019
- College of Biological Sciences Dean's Honor List, Winter Quarter 2018
- Eugene Harvey Bush Scholarship, 2017-2018

MENTORING EXPERIENCE

Fall 2022: Biology 152 Undergraduate Independent Research Mentor
University of Wisconsin-Madison, USA.

- Developed a semester-long research project with a sophomore undergraduate student from experimental design to poster presentation

Winter 2023: Undergraduate Research Mentor
University of Wisconsin-Madison, USA.

- Mentored an undergraduate to continue research from the preceding semester and submit a grant proposal (funded).

Fall 2024: Undergraduate Research Mentor

- Mentoring three undergraduates through different stages in their research career. Mentoring one student as she complete her capstone project, another as a lab research assistant, and the last student as she begins her first experience as a researcher.

OUTREACH & SCIENCE COMMUNICATION

- Bee Campus USA Steering Committee Member, Spring 2022-Present
- "Bus Stop Bugs" Developer and Designer, Implemented Fall 2022.
<https://entomology.wisc.edu/outreach/bus-stop-bugs/>
- Tainter Creek Watershed Alliance Stream Day Presenter, June 2022.
- University of Wisconsin Entomology Graduate Student Association Executive Board Member - Insect Ambassadors Co-coordinator, January 2022-December 2023
- Article Contributor for *The Aggie*, (Asian Giant Hornet)
- Science Communication Website Co-Founder and Contributor Launched July 2020
 - <http://unscilenced.com/>

SERVICE

- University of Wisconsin Integrative Biology Graduate Organization Outreach Co-coordinator, August 2024-Present
- University of Wisconsin Entomology Graduate Student Association Executive Board Member – President, May 2023-May 2024
- University of Wisconsin Entomology Graduate Student Association Executive Board Member - Insect Ambassadors Co-coordinator, January 2022-May 2023

RESEARCH AND COMPUTATIONAL SKILLS

Field work: Proficient in collection of pollen and nectar, California native plant and insect identification, adult *Osmia lignaria* release, *Varroa destructor* mite identification and count in hives, Aquatic and terrestrial insect collection and specimen preservation, Quadrat and transect establishment.

Laboratory: Proficient in Gas chromatography-electroantennographic detection (GC-EAD), Gas chromatography-mass spectrometry (GC-MS), Headspace collection of volatiles, Synthesis of reference compounds, Dissection and colony maintenance of *Osmia lignaria* and *Bombus spp.*, Insect pinning and collection organization.

Microbiology: Experience in soil baiting, bioassay of entomopathogenic fungi and bacteria using *Tenebrio molitor*. Proficient in Hemocytometer use, preparation of microbial suspensions, running fungal growth trials in nectar and pollen samples, inoculating nectar with microbes for *Bombus vosnesenskii* microcolonies, preparation of fungal culture.

Molecular Techniques: Experience in Molecular genotyping of *Trichinella* with Multiplex PCR and Gel electrophoresis, preparation of *Osmia lignaria* samples for qPCR.

Computational and statistical analysis: Proficient in R, Rstudio, SPSS, Excel, behavioral analysis with BORIS software for *Osmia lignaria*, degree day forecasting. Experience with Python, SLEAP: Multi-animal pose tracking.

REFERENCES

James Crall, Ph.D.
Assistant Professor
Department of Entomology
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Neal Williams, Ph.D.
Professor
Department of Entomology and Nematology
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Assistant Professor
Department of Forest and Wildlife Ecology
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