Tobias Gerhard Mueller

NSF graduate fellow

McArt Lab ◆ Danforth Lab

Department of Entomology, Cornell University, Ithaca, NY

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Education

Ph. D. | Entomology **2021 - present**

Co-advised by Scott McArt and Bryan Danforth

Cornell University

B. Sc. with honors | Environmental Science and Management **2014 - 2017**

Focus on Ecology, Biodiversity, and Conservation

University of California, Davis

Professional Appointments

Campus Head Steward **Feb 2020 - June 2021**

UAW5810, Postdoc and Academic Researchers Union

- Elected as first ever UC Davis campus head steward
- Seated on the union leadership body representing approx. 12,000 postdocs and academic researchers
- Personally met with the majority of academic researchers hired at UC Davis to explain their rights and deal with problem resolution

Lab Manager | Staff Researcher **Oct 2019 - June 2021**

Vannette Lab, UC Davis Department of Entomology

- Oversaw and managed research lab of approx. 10 people
- Conducted experiments on flower nectar microbes looking at community formation, antimicrobial nectar proteins, and the impacts of nectar microbes on pollination
- Constructed a MALDI-TOF custom identification library to allow for high throughput identification of unknown microbes to species in minutes

Field Technician **Jun 2019 - Oct 2019**

Sacramento Yolo County Mosquito Vector Control District

- Scouted and treated mosquito source populations to stop the spread of west nile virus
- Provided public outreach to citizens about mosquito abatement practices
- Sampled and collected mosquito populations to quantify the prevalence of west nile virus
- Implemented Integrated Pest Management (IPM) treatment practices to stop mosquito pesticide resistance

Staff Researcher **Feb 2018 - Jun 2019**

Rosenheim Lab, UC Davis Department of Entomology

- Designed and ran experiments both in the lab and field which led to the rewriting of California citrus IPM guidelines
- Oversaw and managed a large database of confidential grower crop information
- Served as a liaison for farmers and agricultural groups by disseminating information and coordinating research
- Attended and presented regularly at citrus extension meetings and conferences
- Analyzed experimental data on pest impacts across citrus species

Research Assistant **Aug 2015 - Dec 2017**

Rosenheim Lab, UC Davis Department of Entomology

- Conducted multi-year field sampling in alfalfa and cotton across California
- Preformed behavioral assays of beneficial insects
- Received university funding to develop and pursue independent research on insect viral-behavioral interactions and their related metabolomic impacts

Publications, peer reviewed

Mueller, T., Francis, J., Vannette, R. (2022) Nectar compounds can impact the growth of microbes and shift community dynamics in floral nectar. submitted. doi: 10.1101/2022.03.29.485809

Kahl, H., **Mueller, T.**, Cass, B., Xi, X., Cluff, E., Rosenheim, J. (2022) Herbivory by European Earwigs (*Forficula auricularia*; Dermaptera: Forficulidae) on Commonly Cultivated California Citrus Species. *Journal of Economic Entomology.* doi: 10.1093/jee/toac030

Vannette, R., Hall, G., McMunn, M., **Mueller, T.**, Munkres, I., Perry, D. (2021) Culturable bacteria are more common than fungi in floral nectar and are more easily dispersed by thrips, a ubiquitous flower visitor, *FEMS Microbial Ecology*. doi: 10.1093/femsec/fiab150

Kahl, H., **Mueller, T.**, Cass, B., Xi, X., Cluff, E., Grafton-Cardwell, B., Rosenheim, J. (2021) Characterizing Herbivory by European earwigs (Dermaptera: Forficulidae) on Navel Orange Fruit. *Journal of Economic Entomology*. doi: 10.1093/jee/toab121

Cass, B., Kahl, H., **Mueller, T.**, Xi, X., Grafton-Cardwell, E., Rosenheim, J. (2020) Profile of fork-tailed bush katydid (*Scudderia furcata* Orthoptera: Tettigoniidae) feeding on fruit of clementine mandarins. *Journal of Economic Entomology.* doi:10.1093/jee/toaa258

Cass, B., Hack, L., **Mueller, T.**, Buckman, D., Grafton-Cardwell, E., Rosenheim, J. (2020) Arthropod infestation levels on mandarins in California. *Journal of Economic Entomology*, 113: 2335–2342. doi:10.1093/jee/toaa141

Mueller, T., Kahl, H., Cass. B., Grafton-Cardwell, E., Rosenheim, J. (2019) Differential impacts of citrus thrips, *Scirtothrips citri* (*Thysanoptera: Thripidae*), across sweet orange and mandarin species. *Journal of Economic Entomology*, 112: 2767–2773. doi:10.1093/jee/toz178

Rosenheim, J., Booster, N., Culshaw-Maurer, M., **Mueller, T.**, Kuffel, R., Law, Y., Goodell, P., Pierce, T., Godfrey, L., Hunter, W., Sadeh, A. (2019) Disease, contagious cannibalism and associated population crash in an omnivorous bug, *Geocoris pallens*. *Oecologia*, 190: 69–83. doi:10.1007/s00442-019-04407-y

Presentations

Mueller, T., Zhao, C., Sossa, D., Baert, N., McArt, S. (2022) Pesticide risk during apple pollination differs between honey bees and native wild bees. Cornell Jugatae Entomology Research Symposium. Virtual. Talk

Mueller, T., Zhao, C., Sossa, D., Baert, N., McArt, S. (2022) Pesticide risk during apple pollination differs between honey bees and native wild bees. American Bee Research Conference. Virtual. Talk

Mueller, T., Kahl, H., Cass. B., Rosenheim, J. (2018) Susceptibility to citrus thrips (Scirtothrips citri) across citrus species. Conference of the Association of Applied IPM Ecologists, Visalia, CA. Talk

Rosenheim, J., Grafton-Cardwell, E., Cass, B., Kahl, H., **Mueller, T**. (2018) Improving pest management for California mandarins. California Citrus Conference, Visalia, CA. Poster.

Mueller, T., Rosenheim, J. (2017) Testing pathways of viral induced cannibalism in Geocoris pallens. UC Davis Undergraduate Research Conference, Davis, CA. Poster

Fellowships and awards

NSF Graduate Research Fellowship	**2021**
Cornell Entomology Fellowship	**2021**
UC Davis Provost Undergraduate Research Fellowship	**2017**
Tracy and Ruth Storer Zoological Scholarship	**2015**
Departmental Citation for Outstanding Undergraduate Accomplishments	**2017**
UC Davis Research Scholarship Program in Insect Biology	**2015**

Outreach

Cornell Jugatae symposium committee
Served alongside 2 other members on the graduate student committee, organizing and planning the annual research symposium

UC Davis Arboretum
Created outreach materials to educate gardeners on how plants are used by pollinators and which native plants should be bought when establishing a pollinator garden

California Native Plant Society
Produced educational pamphlets on native butterflies and urban insects of the Sacramento, CA region

Citrus Extension field days
Helped lead field extension days, bringing local growers and stakeholder to field sites to learn about citrus pests and current research.

Professional Memberships

Entomological Society of America

California Lichen Society

Journals Reviewed For

Phytoparasitica

Special trainings attended

SETAC Pesticide Risk Assessment for Pollinators **2021**

UndocuAdvocate Program for Educators **2021**