

# Terese Maxine P. Cruz

**Postgraduate Researcher – University of Arizona, School of Natural Resources & the Environment**

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## ACADEMIC BACKGROUND

2019-23 **University of Arizona**

- B.S. Ecology & Evolutionary Biology (Cumulative GPA 3.65)
- Minor: Mathematics

## RESEARCH EXPERIENCE

2023- **Postgraduate Researcher** for Dr. Kathleen Prudic, School of Natural Resources & the Environment, University of Arizona, Tucson, AZ.

- Estimating species distributions of a desert solitary bee and its specialized nectar trees using maxent modeling and community science data. This project is underway (see [GitHub repository](#)) and is targeting submission to a journal by summer 2024, with me as first author.
- Organizing NSF-HDR grant courses and publication content (RNR 496B: Applied Data Science Seminar, and WFSC 223: Data in the Wild).
- Assisting with BioDiversity interns' lesson development for 9<sup>th</sup> grade students.
- Assisting with other publications and course materials as needed.

2023 **Research Assistant** for Dr. Peter Ellsworth, Department of Entomology, University of Arizona – Maricopa Agricultural Center, Maricopa, AZ.

- Assisted in field bioassays on efficacy and non-target effects of insecticides and transgenic cotton, including regulated trials).
- Participated in Field Day events; helped organize and educate the public on proper IPM practices.
- Counted and identified cotton pests and beneficial arthropods.
- Performed scientific data collections and arthropod sampling.
- Conducted infestation of arthropods (Whiteflies) into field cages to measure non-target impacts of genetically modified cotton.
- Supported guayule field trials investigating flea beetle control and damage.
- Entered and proofed data.

2022-23 **Teaching Assistant** for Dr. Ellen Bledsoe & Dr. Kathleen Prudic, School of Natural Resources & the Environment, University of Arizona, Tucson, AZ.

- Assisted students with debugging in R/RStudio and navigating GitHub.
- Graded coding and discussion assignments.
- Held office hours when needed or requested.
- WFSC 223: Dealing with Data in the Wild / RNR 496: Applied Data Science / RNR 620: Ecological Data in R

2022-23 **Research Assistant** for Dr. Kathleen Prudic, School of Natural Resources & the Environment, University of Arizona, Tucson, AZ.

- Collaborated with Dr. Stephen Buchanan on an independent bee project (*Centris pallida*). This is being continued under my time as a postgraduate researcher.
- Evaluated monsoon rain phenology in Saguaro National Park using linear regression models and long-term sensor data from the National Park Service (NPS) and U.S. Geological Survey (USGS).

- This project was presented as a talk at the 2023 Southwestern Undergraduate Mathematics Research Conference (SUnMaRC) with me as first author alongside Dharma Hoy.
- Programmed R Shiny webpage of Arizona Monarch occurrences for U.S. Fish and Wildlife Service (USFWS) conservation planning and outreach programs.
- Provided support at weekly UA library R Sessions to assist with debugging and workshops.
- Assisted with data entry and organizational activities.

2022 **Applied International Development Economics (AIDE) Intern** for Dr. Anna Josephson, Dr. Jeffrey Michler, Dr. April Athnos, & Lorin Rudin-Rush, Department of Agricultural & Resource Economics, University of Arizona, Tucson, AZ.

- Analyzed High-Frequency Phone Survey (HFPS) data from the World Bank using Stata.
- Used linear regression models on data from Uganda. We examined the relationship on choice of top three major crops planted during the COVID-19 season, and its relation to the household's food insecurity experience score (FIES) count.
- Collaborated with students from other departments to generate a poster, with me as a junior author.

2021-23 **Research Assistant** for Dr. Yves Carrière, Department of Entomology, University of Arizona, Tucson, AZ.

- Assisted with hands-on experience in insect colony rearing (*Helicoverpa zea*).
- Performed arthropod diet preparation, sex identification, and VIP/MVP toxin overlays.
- Trained new hires.

2021 **Math Tutor** for THINKTANK, Bartlett Academic Success Center, University of Arizona, Tucson, AZ.

- Tutored students in Calculus I and II.
- Participated in team-building exercises and leadership trainings.

2020-21 **Arizona NASA Space Grant Intern** for Dr. Kathleen Prudic & Dr. Katherine Gerst, School of Natural Resources & the Environment, University of Arizona, Tucson, AZ.

- Evaluated UA as a pollinator biodiversity hotspot in Tucson using permutation approaches and community science data. This project resulted in a publication with me as a junior author.
- Analyzed and visualized iNaturalist and USA-NPN datasets using R.
- Designed and published a pollinator field guide to support community education on biodiversity and species conservation at the UA Arboretum.
- Presented project at Arizona NASA Space Grant statewide symposium.

2019-21 **Research Assistant** for Dr. Peter Ellsworth & Isadora Bordini, Department of Entomology, University of Arizona – Maricopa Agricultural Center, Maricopa, AZ.

- Assisted in field bioassays on efficacy and non-target effects of insecticides and transgenic cotton, including regulated trials).
- Counted and identified cotton pest and beneficial arthropods.
- Performed scientific data collections and arthropod sampling.
- Conducted infestation of arthropods (*Lygus* and Whiteflies) into field cages to measure non-target impacts of a newly genetically modified cotton.
- Maintained insect colonies (*Lygus hesperus*) and research plots.
- Supported guayule field trials investigating flea beetle control and damage.
- Entered and proofed data.

- 2018 **Project Puente Intern** for Dr. Peter Ellsworth & Isadora Bordini, Department of Entomology, University of Arizona – Maricopa Agricultural Center, Maricopa, AZ.
- Assessed the effects of a new transgenic Bt cotton (ThryvOn cotton) on Western Flower thrips (*Frankliniella occidentalis*) populations.
  - Assisted in developing methodologies for effective thrips sampling by determining optimal sticky trap configuration, cotton flower form, and time of day for collection.
  - Designed kits with cotton predators to support outreach efforts in Cotton Integrated Pest Management.
  - Presented poster project to USDA and UA researchers.

## GRANTS & HONORS

2022	Academic Year Academic Distinction, UA	2019	Dean's List, UA
2022	Dean's List with Distinction, UA	2019	Wildcat Distinction Scholarship, UA, \$36000 (\$9000/year for 4 years)
2022	Pinal 40 Scholarship, \$2000		
2021	Arizona NASA Space Grant, UA	2019	Pinal 40 Scholarship, \$2000
2021	Pinal 40 Scholarship, \$2000	2019	Dean's Exemplary Award, UA, \$2000
2020	Academic Year Academic Distinction, UA	2019	Bridgestone Americas Scholarship, National Merit Corporation, \$4000
2020	Dean's List with Distinction, UA		
2020	Pinal 40 Scholarship, \$2000	2018	Project Puente internship, CAC / UA

## PUBLICATIONS

Rowe H. I., Johnson B., Broatch J., **Cruz T. M. P.**, & Prudic K. L. (TBA). Winter rains support butterfly diversity, but monsoon rainfall drives fall butterfly abundance in the arid southwest US. TBA. TBA.

Prudic K. L., **Cruz T. M. P.**, Winzer J. I. B., Oliver J. C., Melkonoff N. A., Verbais H., & Hogan A. (2022). Botanical Gardens Are Local Hotspots for Urban Butterflies in Arid Environments. *Insects*, 13(10), 865.  
<https://doi.org/10.3390/insects13100865>

## POSTERS & PROJECTS

Bingham T., Branham R., **Cruz M.**, & Thomason J. (2022). *Subsistence Persistence: Crop Mix & Food Insecurity in Uganda*. Google slides. [Link](#)

**Cruz T. M. P.**, & Prudic K. L. (2021). *University of Arizona Pollinator Field Guide*. iNaturalist guide. [Link](#)

## ACADEMIC PRESENTATIONS

04/16/2023. **Cruz, T. M. P.**; Hoy, D. *An Analysis of Water Data in Saguaro National Park*. Southern Undergraduate Mathematics Research Conference (SUnMaRC), Colorado State University, CO. PowerPoint. [Link](#)

04/17/2021. **Cruz, T. M. P.**; Gerst, K. L.; Prudic, K. L. *Urban Biodiversity Life Rafts: A Way to Conserve our Pollinators*. Arizona NASA Space Grant Symposium, University of Arizona, AZ. PowerPoint. [Link](#)

07/21/2018. **Cruz, T. M. P.**; Bordini, I.; Ellsworth, P. C. *Thrips in Cotton: Friend or Foe*. Project Puente internship. University of Arizona, Maricopa Agricultural Center. Poster. [Link](#)

## SKILLS

R (programming) / Git / GitHub / Python / Microsoft / Stata / Wolfram Mathematica / English (proficient) / Tagalog (proficient) / Spanish (beginner).

## AFFILIATIONS

2022-2023 MathCats (UArizona Mathematics club)

- 2021-2023 Alpha Epsilon (Honor Society of Agricultural Engineering)
- 2019-2020 Women’s Ultimate club sport
- 2019-2020 MycoCats (UArizona Mushroom club)
- 2019-2020 Controlled Environment Agriculture Student Association