

# Morgan N. Thompson

## Curriculum Vitae

Department of Entomology, Texas A&M University  
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### EDUCATION

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**Texas A&M University**, College Station, Texas  
*Doctor of Philosophy in Entomology* Expected by May 2024

**Dissertation:** Local and systemic plant defense responses to above- and belowground specialist herbivores

**Advisor:** Dr. Anjel Helms

**University of Maryland**, College Park, Maryland  
*Master of Science in Entomology* May 2019

**Thesis:** Evaluating the effect of potato leafhopper (Family: Cicadellidae) feeding on biological nitrogen fixation of alfalfa (*Medicago sativa*)

**Advisor:** Dr. William Lamp

**College of William and Mary**, Williamsburg, Virginia  
*Bachelor of Science Degree in Biology* May 2016

**Honors Thesis:** The effect of climate variation on population dynamics of butterfly species across southeastern Virginia

**Advisor:** Dr. Matthias Leu

### RESEARCH EXPERIENCE

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**USDA NIFA AFRI Predoctoral Fellow** June 2023-Present  
*Department of Entomology, Texas A&M University*

**Merit Fellow and Teaching Assistant** June 2019-June 2023  
*Department of Entomology, Texas A&M University*

**Graduate Research and Teaching Assistant** September 2016-May 2019  
*Department of Entomology, University of Maryland*

**Undergraduate Research Assistant** May 2014-May 2016  
*Department of Biology, College of William and Mary*

### RESEARCH GRANTS

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**USDA NIFA AFRI Predoctoral Fellowship (\$120,000)** June 2023-June 2025  
*“Micro-management: identifying crop-protective microbiota for enhanced plant resistance to insect pests”*

**Sigma Xi Grant in Aid of Research (\$500)** January 2022-January 2023  
*“Playing the wild card: comparing microbial communities of domesticated and wild plant species for resistance to insect herbivory”*

**Texas Ecological Laboratory (Ecolab) Research Grant** (\$4,929) January 2019-January 2021  
“Can a weedy gourd species attract and support agricultural insect pests?”

**Northeast SARE Graduate Student Grant** (\$8,804) May 2018-June 2019  
“Evaluating the effect of potato leafhopper feeding on biological nitrogen fixation in alfalfa”

## **PEER-REVIEWED PUBLICATIONS**

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\*undergraduate student mentored ^co-first authorship

10. **Thompson, M.N.** ^, J. Arriaga\*^, B.J. Bradford1\*^, R. Kurian\*^, G. Strozier1\*^, and A.M. Helms (*Accepted*) Belowground insect herbivory induces systemic volatile emissions that strengthen neighboring plant resistance aboveground. *Plant, Cell & Environment*.
9. **Thompson, M.N.**, J.M. Grunseich, L.O. Marmolejo\*, N.M. Aguirre, P.A. Bradicich, S.T. Behmer, C.P.-C. Suh, and A.M. Helms (2022) Undercover operation: Belowground insect herbivory modifies systemic plant defense and repels aboveground foraging insect herbivores. *Frontiers in Ecology and Evolution*. <https://doi.org/10.3389/fevo.2022.1033730>
8. **Thompson, M.N.**, R.F. Medina, A.M. Helms, and J.S. Bernal (2022) Improving natural enemy selection in biological control through greater attention to chemical ecology and host-associated differentiation of target arthropod pests. *Insects*. <https://doi.org/10.3390/insects13020160>
7. Marmolejo, L.O.\* , **M.N. Thompson**, and A.M. Helms (2021) Defense suppression through interplant communication depends on the attacking herbivore species. *Journal of Chemical Ecology*. <https://doi.org/10.1007/s10886-021-01314-6>
6. Grunseich, J.M., N.M. Aguirre, **M.N. Thompson**, J.G. Ali, and A.M. Helms (2021) Chemical cues from entomopathogenic nematodes vary across three species with different foraging strategies, triggering different behavioral responses in prey and competitors. *Journal of Chemical Ecology*. <https://doi.org/10.1007/s10886-021-01304-8>
5. **Thompson, M.N.**, and W.O. Lamp (2021) Herbivory enhances legume-rhizobia symbioses function, increasing aboveground allocation of biologically fixed nitrogen, but only in soils without additional nitrate. *Plant and Soil*. <https://doi.org/10.1007/s11104-021-04999-6>
4. Eyer, P.A., P.T. Shults, M.R. Chura, M.N. Moran, **M.N. Thompson**, A.M. Helms, R.K. Saran, and E.L. Vargo (2021) Divide and conquer: Multicolonial structure, nestmate recognition, and antagonistic behaviors in dense populations of the invasive ant *Brachymyrmex patagonicus*. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.7396>
3. Bernaola, L., M. Darlington, K. Britt, P. Prade, M. Roth, A. Pekarcik, M. Boone, D. Ricke, A. Tran, J. King, K. Carruthers, **M. Thompson**, J.J. Ternest, S.E. Anderson, S.W. Gula, K.C. Hauri, J.R. Pecenka, S. Grover, H. Puri, and S. G. Vakil (2021) Technological advances to address current issues in entomology: 2020 Student Debates. *Journal of Insect Science*. <https://doi.org/10.1093/jisesa/ieab025>
2. Grunseich, J.M., **M.N. Thompson**, A.A. Hay, Z. Gorman, M.V. Kolomiets, M.D. Eubanks, and A.M. Helms (2020) Risky roots and careful herbivores: Sustained herbivory by a root-feeding herbivore attenuates indirect plant defences. *Functional Ecology*. <https://doi.org/10.1111/1365-2435.13627>
1. Grunseich, J.M.^, **M.N. Thompson**^, N. Aguirre, and A.M. Helms (2019) The role of plant-associated microbes in mediating insect herbivore foraging behavior. *Plants*. <https://doi.org/10.3390/plants9010006>

## **MANUSCRIPTS IN ADVANCED STAGES**

\*undergraduate student mentored

- In prep.* **Thompson, M.N.**, D.W. Bapst, M.D. Eubanks, M.V. Kolomiets, and A.M. Helms. Systemic plant responses to invertebrate herbivory: a meta-analysis. (for *Ecology Letters*)
- In prep.* **Thompson, M.N.**, D. Merrell\*, J.G. Garces\*, B.J. Bradford\*, C.P.-C. Suh, and A.M. Helms. Plant domestication and co-existence history with insect herbivores differentially shapes defense responses to aboveground and belowground attackers. (for *Functional Ecology*)
- In prep.* **Thompson, M.N.** and W.O. Lamp. Potato leafhopper (Hemiptera: Cicadellidae) injury alters nitrogen acquisition and allocation in *Medicago sativa* across cultivars and cropping systems. (for *Environmental Entomology*)

## **NON-PEER REVIEWED/EXTENSION PUBLICATIONS**

3. King, J., **M. Thompson**, and J. Martin. (2022) The mothers of entomological history: Reflecting on who we honor and how we do it. *Entomology Today*.
2. **Thompson, M.N.**, and W.O. Lamp (2019) Can aboveground pest pressure disrupt nitrogen fixation in alfalfa? *Maryland Agronomy News*.
1. **Thompson, M.N.**, and W.O. Lamp (2017) Pest alert: Kudzu bugs found on Maryland soybeans. *Agronomy News*.

## **INVITED ORAL PRESENTATIONS**

5. “Ecological consequences of systemic plant defense against insect herbivory.” Entomological Society of America Annual Meeting, Rising Stars of Entomology Award Symposium, National Harbor, MD, *November 2023*
4. “Unexpected chatter in plant-plant communication.” Entomological Society of America Joint North Central and Southwestern Branch Meeting, Member Symposium, Oklahoma City, OK, *April 2023*
3. “Ecological consequences of plant defense against aboveground and belowground insect herbivory.” American Society of Plant Biologists, Environmental and Ecological Plant Physiology Section (Virtual), *April 2023*
2. “Systemic plant responses to belowground herbivory deter aboveground herbivores.” Symposium on Insect-Plant Interactions (Virtual), *July 2021*
1. “Plant responses to belowground herbivory alter interactions with aboveground herbivores.” Entomological Society of America Annual Meeting, P-IE Section Symposium (Virtual), *November 2020*

## **ORAL PRESENTATIONS**

18. “Eavesdropping plants: Belowground insect herbivory strengthens neighboring plant defenses aboveground.” Texas A&M University 26<sup>th</sup> Annual Graduate Student Forum, College Station, TX, *August 2023*
17. “Underneath it all: Belowground insect herbivory enhances systemic plant defense and deters aboveground herbivores.” Entomological Society of America Joint North Central and Southwestern Branch Meeting, Oklahoma City, OK, *April 2023*
16. “Exposure to parasitic nematodes modifies cotton growth and defense across different soil microbial communities.” Beltwide Cotton Conference, New Orleans, LA, *January 2023*
15. “Taking root: Plant-herbivore coexistence history alters belowground plant defense.” Entomological Society of America, Canada, and British Columbia Joint Annual Meeting, Vancouver, BC, Canada, *November 2022*

14. “How the chemical ecology of host-associated differentiation improves natural enemy selection for biological control.” Entomological Society of America Southwestern Branch Meeting, Dallas, TX, *April 2022*
13. “Belowground insect herbivory deters aboveground foraging herbivores.” Texas A&M University Life Sciences Recruitment Symposium, College Station, TX, *February 2022*
12. “Coexistence history shapes plant defense strategies against belowground root herbivores.” Texas A&M University 24<sup>th</sup> Annual Graduate Student Forum, College Station, TX, *August 2021*
11. “The root cause: belowground herbivory repels aboveground foraging herbivores.” Entomological Society of America (Virtual) Southwestern Branch Meeting, *June 2021*
10. “Undercover operation: root herbivory modifies aboveground plant-herbivore interactions.” Texas A&M University 23<sup>rd</sup> Annual (Virtual) Graduate Student Forum, *August 2020*
9. “Aboveground insect herbivores respond to belowground herbivory on a shared host-plant.” Texas A&M University (Virtual) Ecological Integration Symposium, *April 2020*
8. “How do plant-associated microbes modify host-plant selection for insect herbivores?” Entomological Society of America Virtual Joint North Central and Southwestern Branch Meeting *April 2020*
7. “Soil nutrients and aboveground herbivory alter belowground nitrogen fixation in alfalfa.” Entomological Society of America Annual Meeting, St Louis, MO, *November 2019*
6. “Evaluating the effect of potato leafhopper feeding on biological nitrogen fixation in alfalfa.” Northeastern IPM Center Online Conference, *October 2019*
5. “Aboveground insect herbivory alters a belowground plant-microbe mutualism.” Ecological Society of America Mid-Atlantic Meeting, Bowie, MD, *April 2019*
4. “Potato leafhopper (*Empoasca fabae*) feeding alters above- and belowground nutrient allocation and nitrogen fixation across alfalfa cultivars.” Entomological Society of America Eastern Branch Meeting, Blacksburg, VA, *March 2019*
3. “Can aboveground potato leafhopper (*Empoasca fabae*) feeding disrupt belowground nitrogen fixation in alfalfa?” Entomological Society of America, Canada, and British Columbia Joint Annual Meeting, Vancouver, BC, Canada, *November 2018*
2. “Connecting a belowground mutualism to aboveground herbivory: microbe-plant-insect interactions.” Ecological Society of America Annual Meeting, New Orleans, LA, *August 2018*
1. “Comparing patterns of injury caused by potato leafhopper (Cicadellidae) on nitrogen production across different alfalfa (*Medicago sativa*) cropping systems.” Entomological Society of America Eastern Branch Meeting, Annapolis, MD, *March 2018*

## **POSTER PRESENTATIONS**

5. “Cross-compartment systemic plant responses to herbivory: a meta-analysis.” Gordon Research Conference: Plant-Herbivore Interactions, Ventura, CA, *March 2023*
4. “Tapping into emergency funds: a meta-analysis on systemic plant responses to above- and belowground herbivory.” Plant Biology, Portland, OR, *July 2022*
3. “Using a meta-analysis approach to explore systemic plant responses to above- and belowground insect herbivory.” Entomological Society of America Annual Meeting, Denver, CO, *November 2021*
2. “Comparing patterns of injury associated with potato leafhopper (Family: Cicadellidae) feeding across different alfalfa (*Medicago sativa*) cropping systems.” International Integrated Pest Management Symposium, Baltimore, MD, *March 2018*
1. “Comparing patterns of injury associated with potato leafhopper (Family: Cicadellidae) feeding across different alfalfa (*Medicago sativa*) cropping systems.” Bioscience Day, University of Maryland, College Park, MD, *November 2017*

## **AWARDS**

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### **Research Accomplishment Awards and Fellowships**

|  |           |
|--|-----------|
| College of Agriculture and Life Sciences Dean's Outstanding Achievement Award for Graduate Research, Texas A&M University                        | 2023      |
| John Henry Comstock Graduate Student Award Entomological Society of America Southwestern Branch  | 2023      |
| Kenneth and Barbara Starks Plant Resistance to Insects Graduate Student Award, Entomological Society of America, Plant-Insect Ecosystems Section | 2022      |
| Outstanding Graduate Student Award for Ph.D. Student, Department of Entomology, Texas A&M University   | 2022      |
| John A. Jackman Endowed Scholarship, Department of Entomology, Texas A&M University  | 2021-2022 |
| Merit Fellowship, College of Agriculture & Life Sciences, Texas A&M University   | 2019-2023 |
| Gahan Fellowship Award, Department of Entomology, University of Maryland   | 2016-2019 |
| Dean's Fellowship Award, University of Maryland Graduate School  | 2016      |

### **Research Presentation Awards**

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|---|------|
| 1 <sup>st</sup> place oral presentation, Texas A&M University 26 <sup>th</sup> Annual Graduate Student Forum                                      | 2023 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Joint North Central and Southwestern Branch Meeting Student Competition | 2023 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Student Competition   | 2022 |
| 2 <sup>nd</sup> place oral presentation, Texas A&M University 24 <sup>th</sup> Annual Graduate Student Forum                                      | 2021 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Southwestern Branch Meeting Student Competition                         | 2021 |
| 1 <sup>st</sup> place oral presentation, Texas A&M University 23 <sup>rd</sup> Annual Graduate Student Forum                                      | 2020 |
| 2 <sup>nd</sup> place oral presentation, Entomological Society of America Joint North Central and Southwestern Branch Meeting Student Competition | 2020 |
| 1 <sup>st</sup> place oral presentation, Ecological Society of America Mid-Atlantic Meeting Student Competition                                   | 2019 |
| 2 <sup>nd</sup> place oral presentation, Entomological Society of America Eastern Branch Meeting Student Competition                              | 2019 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Student Competition   | 2018 |
| 1 <sup>st</sup> place poster presentation, Bioscience Day, University of Maryland   | 2017 |

### **Service Awards**

|   |      |
|---|------|
| Accountability, Climate and Equity Women's Progress Award, Texas A&M University | 2022 |
| Ethel Ashworth-Tsutsui Memorial Award for Mentoring,                            | 2022 |

Women in Science and Engineering (WISE), Texas A&M University

**Travel Awards**

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| Goldhaber Travel Award, University of Maryland Graduate School                 | 2018 |
| International Conference Student Award, University of Maryland Graduate School | 2018 |
| Student Section Travel Award, Ecological Society of America                    | 2018 |
| Charlie Mitter Travel Award, Department of Entomology, University of Maryland  | 2018 |

**TEACHING EXPERIENCE**

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**Teaching Assistant**

|   |                   |
|---|-------------------|
| Insect Ecology, Department of Entomology, Texas A&M University                            | Spring 2023       |
| Principles of Biology III, Department of Biology, University of Maryland                  | Fall 2018         |
| Biology of Insects, Department of Entomology, University of Maryland                      | Spring 2018       |
| Pollinators in Crisis, Department of Entomology, University of Maryland                   | Fall 2017         |
| Principles of Molecular & Cellular Biology, Department of Biology, University of Maryland | Spring 2017, 2019 |
| Principles of Evolution, Department of Biology, University of Maryland                    | Fall 2016         |

**Invited Guest Lecturer**

|   |                   |
|---|-------------------|
| Theory of Research (Graduate Course), Department of Plant Pathology, Texas A&M University | Spring 2023       |
| Field Crop Insects (Undergraduate Course), Department of Entomology, Texas A&M University | Spring 2023       |
| Chemical Ecology (Graduate Course), Department of Entomology, Texas A&M University        | Fall 2021, 2023   |
| Insect Ecology (Undergraduate Course), Department of Entomology, Texas A&M University     | Spring 2020, 2022 |

**CURRENT RESEARCH MENTEES**

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**Team of Undergraduate Researchers through Aggie Research Program at Texas A&M University**

*Jayda Arriaga, Jack Bradford, Rachel Kurian, Gage Strozier*

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|--|------|
| Undergraduate Research Scholars Honors Thesis Program ( <i>Jack Bradford, Rachel Kurian, Gage Strozier</i> ), Texas A&M University                     | 2023 |
| 1 <sup>st</sup> place oral presentation ( <i>Rachel Kurian</i> ), Entomological Society of America Joint North Central and Southwestern Branch Meeting | 2023 |
| Oral presentation ( <i>Jack Bradford</i> ), Entomological Society of America Joint North Central and Southwestern Branch Meeting                       | 2023 |
| Oral presentation ( <i>all students</i> ), Texas A&M University Ecological Integration Symposium   | 2023 |
| Oral presentation ( <i>all students</i> ), Texas A&M University Aggie  | 2022 |

|   |      |
|---|------|
| Research Showcase   |      |
| Research project for course credit (ENTO 491) during spring semester ( <i>Jayda Arriaga</i> )               | 2022 |
| 2 <sup>nd</sup> place oral presentation ( <i>all students</i> ), Texas A&M University Student Research Week | 2022 |

## **FORMER RESEARCH MENTEES**

### **Undergraduate Researcher through USDA-NIFA funded Research and Education Experiences for Undergraduates (REEU) Program at Texas A&M University**

*Jeremy Garces (pursuing B.S. in Biology at University of Texas Rio Grande Valley)*

|  |      |
|--|------|
| Poster presentation, Texas A&M Summer Undergraduate Research Poster Session            | 2023 |
| Oral presentation, Texas A&M Diversity in Entomology Summer REEU Program Presentations | 2023 |

### **Undergraduate Researcher through Helms Lab at Texas A&M University**

*Laura Marmolejo (now pursuing M.S. in Entomology at Michigan State University)*

|  |      |
|--|------|
| Oral presentation, Entomological Society of America, Canada, and British Columbia Joint Annual Meeting   | 2022 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Southwestern Branch Meeting  | 2022 |
| Oral presentation, Texas A&M University Student Research Week  | 2022 |
| College of Agriculture and Life Sciences Dean's Outstanding Achievement Award for Undergraduate Research, Texas A&M University   | 2022 |
| Oral presentation, Entomological Society of America Annual Meeting Southwestern Branch Undergraduate Student Achievement in Entomology Award, Entomological Society of America | 2021 |
| 1 <sup>st</sup> place oral presentation, Entomological Society of America Southwestern Branch Meeting  | 2021 |
| Oral presentation, Entomological Society of America Annual Meeting   | 2020 |
| 2 <sup>nd</sup> place oral presentation, Aggie Women in Entomology (AWE) Undergraduate Research Symposium  | 2020 |

### **Undergraduate Researcher through Helms Lab at Texas A&M University**

*Danielle Merrell (now pursuing Ph.D. in Horticulture and Agronomy at University of California, Davis)*

|   |      |
|---|------|
| Oral presentation, Entomological Society of America Annual Meeting              | 2021 |
| Oral presentation, Entomological Society of America Southwestern Branch Meeting | 2021 |
| Oral presentation, Central Ecology and Evolution Conference                     | 2021 |

### **Undergraduate Researcher through Lamp Lab at University of Maryland**

*Emily Mast (now pursuing O.T.D. at Mary Baldwin University)*

|  |           |
|--|-----------|
| Poster presentation, University of Maryland Undergraduate Research Day | 2019      |
| Undergraduate research credit hours, University of Maryland            | 2018-2019 |

### **Undergraduate Researcher through Lamp Lab at University of Maryland**

*Sami Louguit*

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|---|-----------|
| Undergraduate research credit hours, University of Maryland               | 2018      |
| <b>High School Researchers through Lamp Lab at University of Maryland</b> |           |
| <i>Nina McGranahan</i>  |           |
| High school science & technology internship program                       | 2018-2019 |
| <i>Cameron Anderson</i>   |           |
| High school science & technology internship program                       | 2017-2018 |

## **PROFESSIONAL SERVICE**

|   |              |
|---|--------------|
| Symposium co-organizer, Entomological Society of America Joint North Central and Southwestern Branch Meeting ( <i>How plant stress affects insects: herbivores, pollinators, and more</i> )   | 2023         |
| Student affairs committee member, Entomological Society of America Southwestern Branch  | 2022, 2023   |
| Panelist, Texas A&M University Mentoring Undergraduate Researchers Workshop   | 2022, 2023   |
| Graduate student representative, Faculty search committee for tenure-track Assistant Professor of Entomology – Global Public Health, Department of Entomology, Texas A&M University   | 2022         |
| Aggie Allies Training for Supporting LGBTQ+ Students  | 2022         |
| Symposium co-organizer, Entomological Society of America Annual Meeting (2022: <i>Highlighting women's research: Abiotic and biotic stressors of agricultural food-systems</i> ; 2021: <i>Highlighting women's research: Insect adaptations to a changing world</i> ) | 2021, 2022   |
| Aggie Women in Entomology Salary Negotiation Workshop Organizer   | 2021         |
| President, Aggie Women in Entomology, Department of Entomology, Texas A&M University  | 2021-2022    |
| Black History Month Panel Discussion Organizer: " <i>The contributions of Black entomologists to insect sciences</i> "  | 2021         |
| Graduate student representative, Diversity, Equity and Inclusion Committee, Department of Entomology, Texas A&M University  | 2020-2022    |
| Seminar chair, Entomological Graduate Student Organization, Department of Entomology, Texas A&M University  | 2020-2021    |
| Student debate competitor, Entomological Society of America   | 2020         |
| Discussion leader, Entomological Society of America Plant-Insect Ecosystems Wildly Important Goals: Public Education & Outreach   | 2020         |
| Peer reviewer of research manuscripts in the journals: <i>Plant and Soil</i> (1), <i>Microbial Ecology</i> (1), <i>Biological Control</i> (1), <i>Arthropod-Plant Interactions</i> (1)  | 2020-Present |
| Social chair, Entomological Student Organization, Department of Entomology, University of Maryland  | 2017-2018    |
| Entomology Games (formerly 'Linnean Games') competitor, Entomological Society of America  | 2017-2023    |

## **PROFESSIONAL ASSOCIATIONS**

|                                  |              |
|----------------------------------|--------------|
| Ecological Society of America    | 2018-Present |
| Entomological Society of America | 2017-Present |



## **COMMUNITY OUTREACH AND SERVICE**

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| Regional High School Science Bowl Moderator                      | 2023       |
| Elementary School 'Entomology in Spanish' Event Coordinator      | 2022, 2023 |
| Texas Science and Engineering Fair Judge                         | 2022       |
| 'Research and Brews' seminar through Texas A&M University        | 2022       |
| Graduate and Professional Student Government                     |            |
| Aggie Women in Entomology Presentation at Girl Scout Camp        | 2021       |
| Ronin Spring Farm Day Volunteer                                  | 2021, 2022 |
| Texas A&M University Student Research Week Judge                 | 2021       |
| Texas Science & Engineering Fair Judge                           | 2020, 2021 |
| Ecology and Evolutionary Biology Program Darwin Day Volunteer    | 2020, 2021 |
| STEM Pack Meeting at Bowen Elementary School Volunteer           | 2020       |
| Brazos Museum of Natural History's Owl-O-Ween Festival Volunteer | 2019       |
| High School Science Fair Judge                                   | 2018       |