

# Kayla Hankins

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## Education

Master of Science in Biology (2023)

Sam Houston State University, Huntsville, TX

Bachelor of Science in Biology & Plant and Soil Sciences (2018)

Sam Houston State University, Huntsville, TX

## Work Experience

Seed Bank Conservation Botanist

January 08, 2024-Present

Botanical Research Institute of Texas (BRIT) – Fort Worth, TX

- Responsibilities include seed specimen collection, curation, research, and management of the BRIT Conservation Seed Bank at the Fort Worth Botanic Garden. I also work closely with a wide variety of cross-disciplinary academic collaborators, private land owners, federal, state, and municipal agencies to conserve and research at-risk, threatened, and endangered plant species native to the state of Texas. My research spans a variety of subjects, including seed dormancy, germination, longevity, and micropropagation, as well as long-term population monitoring, field surveys, and ecological niche modeling to support species conservation, ranking, and recovery efforts in-situ. Additionally, I regularly supervise and mentor volunteers, contractors, and undergraduate student interns both in the laboratory and the field as well as engage in public outreach with local naturalist chapters, conservation organizations, and student groups in and around the Dallas-Fort Worth Metroplex.

Lead Botanist

May 15, 2023-November 10, 2023

Chicago Botanic Garden – Susanville, CA

- Responsibilities included all logistics and planning for the scouting and operational scale collection of native plant seed for use in conservation and habitat restoration projects throughout northern California and northwestern Nevada. In addition, I was responsible for ensuring the safety of my crew, maintaining communication with local seed partners, collecting and managing data, collecting plant voucher specimens, cleaning seeds, and ensuring the successful completion of all contract deliverables.

Graduate Research Assistant

August 16, 2021-December 09, 2023

Department of Biological Sciences

Sam Houston State University – Huntsville, TX

- Work included the development, evaluation, and analysis of correlative and mechanistic predictive species distribution models to identify areas of high habitat suitability for more than 20 high-risk invasive terrestrial gastropod species in the US under current and future climatic conditions. Work also included project and data management, developing R scripts, templates, educational materials, and undergraduate student mentorship.

GIS Analyst January 25, 2020-January 31, 2021  
Chicago Botanic Garden – Needles, CA

- I generated topographical maps and supplemental materials necessary for crew navigation and scouting in the Mojave Desert ecoregion in both California and Arizona using ArcGIS program software. In addition, I also assisted the crew out and in the field with the operational scale collection of native plant seed for future Desert Tortoise conservation and habitat restoration. Work also included the identification of target plant species and their associates, the collection of herbarium voucher specimens, data collection, and data management.

Biological Field Technician May 15-Oct 04, 2019  
Chicago Botanic Garden – Marsing, ID

- I assisted in the collection of native plant seed using the national Seeds of Success protocol for future conservation and ecosystem restoration projects with the US Bureau of Land Management. Work also included the location and identification of target plant species and their associates, the collection of herbarium voucher specimens, data collection, and data management.

Agroforestry Farm Technician & Tour Guide Oct 15, 2018-Apr 10, 2019  
Rooster Farms Kona – Captain Cook, HI

- Responsibilities included harvesting, pulping, and drying organic Kona coffee in preparation for the milling and roasting processes as well as routine organic farm maintenance and upkeep, mechanical weed control, fulfilling online and in-person product orders, and guiding daily educational farm tours.

Education and Outreach Intern Jun 01–Aug 08, 2015  
Boyce Thompson Institute for Plant Research  
Cornell University - Ithaca, NY

- I helped to develop and further refine educational laboratory curricula for use in participating secondary school science classrooms grades 7-12. I worked directly with educators to help familiarize them with their respective projects and how to properly implement them in their own classrooms. In addition, I also prepared and presented a series of interactive presentations for local primary school aged children on the topics of plant natural variation, genetic diversity, and insect herbivore resistance.

Undergraduate Research Assistant Jan 14-May 07, 2015  
Biological Sciences - Sam Houston State University

- Work included the development of molecular markers to assess the putative hybridization between *Baptisia arachnifera* and *Baptisia lecontei*, maintaining laboratory materials and stock solutions, DNA extraction, gel electrophoresis, PCR amplification, Phusion PCR, and Sequence-Related Amplified Polymorphism (SRAP) analysis.

## Research Experience

Department of Biological Sciences  
Sam Houston State University – Huntsville, TX  
Research Advisor: Dr. Chris Randle

August 2021-December 2023

- The objective of my research is to use publicly available occurrence records sourced from the Global Biodiversity Information Facility (GBIF) for the production of a suite of predictive species distribution models including the General Additive Model (GAM), Maximum Entropy (MaxEnt), Boosted Regression Trees (BRT), and a comprehensive ensemble using the weighted average of all predictions generated over the entire suite to better identify areas of potentially high habitat suitability for over 20 high-risk invasive terrestrial mollusk species in the US under current climatic conditions as well as future projected carbon emissions mitigation scenarios for the years 2060 and 2080.

Department of Biological Sciences,  
Sam Houston State University - Huntsville, TX  
Research Advisor: Dr. Justin Williams

Spring 2017

- Assisted in the GIS analysis of the global distribution of psychoactive and stimulant plants to identify epicenters of high biodiversity and overlap. Once identified, these areas were subjected to further geospatial and statistical analysis to further elucidate any significant relationships between species distribution and drug category (hallucinogen, stimulant, or depressant), chemical composition, mode of consumption, herbivory, and ethnobotanical use.

Texas Research Institute for Environmental Studies (TRIES)  
Sam Houston State University - Huntsville, TX

Fall 2016

- I assisted Dr. Phillip Matich in the survey of reptile and amphibian communities present at the Sam Houston State University biological field station in Huntsville, TX by aiding in the capture, measurement, and identification of species encountered in the field while walking pre-determined transects twice monthly at sunset.

Boyce Thompson Institute for Plant Research  
Cornell University - Ithaca, NY  
Research Advisor: Tiffany Fleming

June-August 2015

- Research focus was primarily upon maize natural variation and insect herbivore resistance in response to abiotic stress and the development of related educational laboratory curricula for students in grades 7-12. Accompanying interactive presentations and materials were also developed for primary school aged children in the local Ithaca area.

Department of Biological Sciences  
Sam Houston State University - Huntsville, TX  
Research Advisor: Dr. Christopher Randle

September 2013-May 2018

- Research focused on the development of molecular markers to directly assess the hypothesis of putative interspecific hybridization between *Baptisia arachnifera* and *Baptisia lecontei*.

### Manuscripts

- Galle, N., **K.R. Hankins**, S.R. Bucheli, J.K. Williams, & C.P. Randle. 2024. "Ecological niche modeling for the prediction of suitable environments for *Chrysodeixis chalcites* (Noctuidae) in the contiguous United States. *Biological Invasions*. 26(10):1-13.
- **Hankins, K.R.**, A. Baloochi, A.W. Brenek, A. Holmes, & C.P. Randle. 2023. "Predictive Species distribution Modeling of Molluscan Agricultural Pests to Assess the Probability of Future Invasions in the United States in a Rapidly Changing Global Climate". Graduate thesis (journal publication(s) in progress).
- **Hankins, K.R.**, A.W. Brenek, C. P. Randle, and J.B. Pascarella. 2018. The Assessment of Interspecific Hybridization between *Baptisia arachnifera* and *Baptisia lecontei* Using Sequence-Related Amplified Polymorphism (SRAP) Markers. Undergraduate thesis.

### Research Grants

- **Hankins, K.R.**, M.B. Byerley, & C.P. Randle. 2024. "*Texas Plant Conservation Initiatives: Mapping, rare species research, and public resource development*". Texas Parks and Wildlife Department Conservation License Plate Grant Program. \$56,149.
- **Hankins, K.R.** 2014. Assessing Interspecific Hybridization Between *Baptisia arachnifera* and *Baptisia lecontei*. Sam Houston State University, College of Science Undergraduate Research Award. \$1,200.

### Presentations

- **Hankins, K.R.**, E. Gonzalez, A. Maloney, M.B. Byerley, & C.P. Randle. 2025. "Accelerating Texas State Conservation and Habitat Threat Assessment Using Deep Learning". Botanical Research Institute of Texas Lunchtime Lecture Staff Symposium. Fort Worth, Texas. Talk.
- **Hankins, K.R.**, E. Gonzalez, A. Maloney, M.B. Byerley, & C.P. Randle. 2025. "Accelerating Texas State Conservation and Habitat Threat Assessment Using Deep Learning". Texas Society for Ecological Restoration Annual Conference. San Antonio, Texas. Talk.
- **Hankins, K.R.**, E. Gonzalez, A. Maloney, M.B. Byerley, & C.P. Randle. 2025. "Accelerating Texas State Conservation and Habitat Threat Assessment Using Deep Learning". Texas Plant Conservation Conference. Austin, Texas. Talk.
- Byerley, M.B., **K.R. Hankins**, & T.F. Rehman. 2025. "An Unexpected Gift of 20 Years of Data". Center for Plant Conservation Annual Conference. St. Louis, Missouri. Talk.

- **Hankins, K.R.** October 2024. "*Conserving Texas Native Plant Biodiversity: Seed Banking, Biology, & Research at the Botanical Research Institute of Texas*". Native Plant Society of Texas Dallas Chapter Meeting. Dallas, Texas. Talk.
- **Hankins, K.R.** October 2024. "*Conserving Texas Native Plant Biodiversity: Seed Banking, Biology, & Research at the Botanical Research Institute of Texas*". Armchair Botanist Forum at the Botanical Research Institute of Texas and Fort Worth Botanic Garden. Fort Worth, Texas. Talk.
- **Hankins, K.R.** September 2024. "*Conserving Texas Native Plant Biodiversity: Seed Banking, Biology, & Research at the Botanical Research Institute of Texas*". Sam Houston State University. Huntsville, Texas. Seminar.
- **Hankins, K.R.** & M.B. Byerley. July 2024. "*Facilitating a Way Out: Issues surrounding the visibility and accessibility of holdings housed at small-scale seed banking institutions & a call for a more united, front facing, and inclusive seed exit strategy.*" Texas Oklahoma Regional Consortia of Herbaria (TORCH) Annual Meeting. University of Oklahoma. Norman, Oklahoma. Poster.
- **Hankins, K.R.** & M.B. Byerley. May 2024. "*Facilitating a Way Out: Issues surrounding the visibility and accessibility of holdings housed at small-scale seed banking institutions & a call for a more united, front facing, and inclusive seed exit strategy.*" Center for Plant Conservation Annual Conference. San Diego, California. Poster.
- **Hankins, K.R.** February 2024. "*Conserving Plant Biodiversity: Native Seed Collection & Species Distribution Modeling*". Lunchtime Lecture at the Botanical Research Institute of Texas and the Fort Worth Botanic Garden. Fort Worth, Texas. Talk.
- **Hankins, K.R.,** A. Baloochi, A.W. Brenek, A. Holmes, & C.P. Randle. March 2023. "*Predictive Species Distribution Modeling of Molluscan Agricultural Pests to Assess the Probability of Future Invasions in the United States in a Rapidly Changing Global Climate*". Association of Southeastern Biologists Annual Research Conference. Winston-Salem, North Carolina. Talk.
- **Hankins, K.R.,** A. Baloochi, L.N. Bianchi, A.R. Brenek, J. Castillo, N.A. Galle, K.J. Nobleza, N.B. Reger, T. Rhodes, J.K. Williams, & C.P. Randle. 2022. "*Predictive niche modeling of pests and pathogens of major US crop commodities.*" Botanical Society of America, Anchorage, Alaska. Talk.
- **Hankins, K.R.,** A. Baloochi, A.W. Brenek, & C.P. Randle. March 2022. "*Predictive Species Distribution Modeling of Molluscan Agricultural Pests to Assess the Probability of Future Invasions in the United States*". Association of Southeastern Biologists Annual Research Conference. Little Rock, AR. Talk.

- **Hankins, K.R.,** A.W. Brenek, C. P. Randle, and J.B. Pascarella. Summer 2017. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei using Sequence-Related Amplified Polymorphism (SRAP) Markers*”. Botanical Society of America Conference. Fort Worth, TX. Talk.
- **Hankins, K.R.,** A.W. Brenek, C. P. Randle, and J.B. Pascarella. Spring 2017. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei using Sequence-Related Amplified Polymorphism (SRAP) Markers*”. Undergraduate Research Symposium – Sam Houston State University. Huntsville, TX. Talk.
- **Hankins, K.R.,** A.W. Brenek, C. P. Randle, and J.B. Pascarella. Spring 2017. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei using Sequence-Related Amplified Polymorphism (SRAP) Markers*”. Association of Southeastern Biologists Conference. Montgomery, AL. Poster.
- **Hankins, K.R.,** A.W. Brenek, C. P. Randle, and J.B. Pascarella. Spring 2017. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei using Sequence-Related Amplified Polymorphism (SRAP) Markers*”. Ronald E. McNair Annual Research Conference. University of North Texas, Denton, TX. Talk.
- **Hankins, K.R.,** A.W. Brenek, C. P. Randle, and J.B. Pascarella. Fall 2015. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei*”. Sam Houston State University’s Ronald E. McNair Scholar’s Research Symposium – Sam Houston State University, Huntsville, TX. Talk.
- **Hankins, K.R.,** T. Fleming. Summer 2015. “*Preparing STEM Educators for Citizen Science Research in Maize Natural Variation and Insect Herbivore Resistance*”. Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, NY. Poster.
- **Hankins, K.R.** Summer 2015. “*Boyce Thompson Institute for Plant Research Presents: Plants and Insects!*”. Hasbrouck Community Center, Cornell University, Ithaca, NY. Talk.
- **Hankins, K.R.** Summer 2015. “*Boyce Thompson Institute for Plant Research Presents: The Beet Armyworm Invasion!*”. Sciencenter, Ithaca, NY. Talk.
- **Hankins, K.R.,** M. Kitchen, T. Fleming, V. Tzin, and G. Jander. Summer 2015. “*Curriculum Development Projects in Plant Biology: Maize Natural Variation and Plant/Insect Interactions*”. Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, NY. Talk.
- **Hankins, K.R.,** C. P. Randle, and J.B. Pascarella. Spring 2015. “*Assessing interspecific Hybridization between Baptisia arachnifera and Baptisia lecontei*”. Undergraduate Research Symposium – Sam Houston State University, Huntsville, TX. Poster.

- **Hankins, K.R.**, C. P. Randle, and J.B. Pascarella. Fall 2014. “*Assessing interspecific Hybridization between *Baptisia arachnifera* and *Baptisia lecontei*”*. Undergraduate Research Symposium – Sam Houston State University, The Woodlands, TX. Talk.

### Volunteer Experience

Herbarium Assistant Oct-Dec 2019

Bureau of Land Management – Marsing, ID

- Work included creating an updated inventory for all herbarium vouchers housed at the BLM Owyhee Field Office, identifying vouchers requiring digitization for inclusion in the Consortium of the Pacific Northwest Herbaria’s online database, ensuring that all vouchers reflected their most current taxonomic classification, annotating those vouchers requiring revision, and creating a library tracking system for vouchers loaned from, or returned to, the OFO herbarium.

Herbarium & Curatorial Assistant Dec 2016-May 2017

SHSU Natural History Museum – Huntsville, TX

- I assisted in the cataloging and digitization of the university’s herbarium and fish collections, pressed and mounted museum herbarium specimens, and maintained and refreshed all preserved aquatic specimens.

### Honors and Scholarships

- SHSU Department of Biological Sciences Outstanding Graduate Student Research Award May 12, 2023
- College of Science and Engineering Technology Graduate Achievement Scholarship Spring 2021 & Fall 2022
- College of Science and Engineering Technology Graduate Recruitment Scholarship Fall 2021
- Chapelwood Foundation Scholarship Fall 2013-Spring 2018
- Ronald E. McNair Scholars Program Fall 2014-Spring 2018
- Elliot T. Bowers Honors Scholarship Spring 2015-Spring 2018
- PEERS Program Scholarship Fall 2015-Spring 2017
- Best overall oral-media panel presentation - SHSU Undergraduate Research Symposium April 29, 2017
- Emma Normand Biological Sciences Endowed Scholarship Fall 2015-Spring 2016
- Dean’s List Fall 2014, 2015, & 2016
- President’s Honor Roll Fall 2014 & Fall 2016

### Academic Societies

- Biological Sciences Graduate Student Organization Fall 2021-Fall 2023
- Delta Tau Alpha Agricultural Honor Society Spring 2018
- Tri-Beta Biological Honor Society Fall 2015-Spring 2018