Project Title Preserving Plants Past: Digitally Uncovering Rice's Hidden Herbarium

Project Summary This project will reveal one of Rice's untapped treasures - the herbarium of Dr. Paul Harcombe. Fellows will work to research, design, test, and implement a scalable digitization workflow to capture and share biodiversity data from select plant specimens, allowing researchers at Rice and beyond to interact with this unique collection.

Project Description Herbaria are the libraries of our dynamic natural world. They provide valuable information regarding current and historic ecosystems and can be used to track changes to those ecosystems so we can make predictions. Rice's Department of Biosciences currently houses a valuable herbarium with specimens from Harris County and the Big Thicket Preserve that were collected by Professor Emeritus Dr. Paul Harcombe and his research team. These specimens represent an incredible diversity of plant taxa and offer valuable insight regarding the natural history of southeast Texas; however, this collection is currently inaccessible to researchers outside of Rice University.

Harcombe's botanical specimens are currently affixed to paper with labels, but when considered as a potential digitized content, and later a valuable dataset, these specimens can collectively tell a story of how the environment has changed over time and in the shadow of our warming planet. The data made possible through digitization and data analysis can uncover these insights and answer key questions about plant conservation. Digital herbaria bridge the gap between historic preservation and modern science, as evident in the JSTOR Global Plants database.

This project aims to initiate a pilot project to identify, transfer, digitize, describe, and make accessible a small subset of the collection online, 200 strategically selected samples to start. The goal of this work is two-fold: to help researchers worldwide access and study these specimens while protecting these fragile materials, and to assist Fondren Library in developing a modernized workflow to digitize and make content accessible with an improved version of an existing digital repository (JSTOR Digital Stewardship Services). Through this work, Rice will be joining several of its peer institutions, including Columbia, Brown, Cornell, and Yale, which also support digital herbaria.

Key Tasks

- Set up the Asana project and collaborative documents, drive spaces, and other tools.
- Sample retrieval and inventory.
- Digitization space/equipment setup.
- Digital herbaria research to inform the digitization setup.
- Digitization and metadata workflow design, testing, and documentation.
- Digitization, metadata creation, and quality control.
- Ingest and quality control.
- Use and enrich the new JSTOR collection, audit and cross-reference digitized samples with contemporary data.

- Compare Big Thicket and Hermann Brown Park Collection samples with current plant growth and document findings.
- Return samples and complete project closeout.

Anticipated Project Outcomes Digitizing these collections would make this valuable data available to ecologists and botanists studying the ecology of southeast Texas. This project would also benefit students in several courses, including Conservation Biology Lab and Plant Diversity Lab, who use historic plant data to inform their course research projects. Having built an effective digitization workflow, based on research and practice in these areas, this project will enable its application towards other Rice University specimen collections. There will also be opportunities for growth in data sharing and analysis, such as through the submission of campus collections to make better use of our JSTOR platform and submit some of that work to external biodiversity repositories and databases.

Qualifications

- Willingness to contribute to the project for a few hours per week.
- Capacity to work independently once trained.
- Undergraduate STEM majors are encouraged to apply (Biosciences, Environmental Science, Environmental Studies, Environmental Engineering); however, other majors will be considered based on interest and/or skill sets.
- Ability to create detailed documentation.
- Awareness/interest in project management tools.

Learning Outcomes

- A suite of best practices in camera-based digitization, specimen-based metadata, file and project management, and specimen analysis.
- The steps required to launch and complete a small-scale pilot project.
- The basics of botanic science, including taxonomic classification and using structures for identification.
- The relevance of local ecology and Rice’s place in it.