COLORADO STATE UNIVERSITY
EXTENSION

Mia Fretz

Heather Houk,
Horticulture & Agriculture
Production Specialist

DURANGO BOTANIC GARDENS RESEARCH PROJECT
LA PLATA COUNTY

PROJECT INTRODUCTION

This summer I spent my time in Durango at the Durango Botanic Gardens. The Durango Botanic Gardens is a public garden located outside the Durango Public Library that has a vast collection of plants across several different garden areas.

Throughout the summer, my internship centered around the garden's plant collection and creating a master plant inventory of every plant within the gardens. This allowed me to work out in the field collecting data for each plant and learning about different plant attributes.

I also worked with the City of Durango's GIS branch to develop a workflow for the summer and was able to collect data using some of their equipment. This introduced me to more precise methods of field data collection and showed me how field data can be incorporated into a larger GIS project.

On the digital side, I learned how to use the data I collected in the field to create an interactive map using ArcGIS. I used tools to sketch out the garden boundaries and the Join Features tool to connect the master plant inventory to the plant inventory layer I created on the map.

Through this process, I was able to bring together the field and digital portions of my internship into one interactive representation of the Durango Botanic Gardens.

INTERNSHIP GOALS

- Create an interactive digital map of the Durango Botanic Gardens that could be used by visitors and volunteers.
- Develop a comprehensive plant inventory documenting the plants throughout the different garden sections.
- Map the locations of plants and important garden features so information could be connected to specific locations within the gardens.
- Organize and standardize plant information including common and scientific names, water requirements, mature height, native status, and other characteristics.

HOW DOES THIS APPLY TO YOUR EDUCATION

This internship allowed me to apply skills from my Ecosystem Science and Sustainability major and GIS coursework in a professional way. I was able to connect concepts from my classes to work involving GIS mapping and spatial data collection. This internship helped me figure out I would like to do GIS work after graduating in the spring.

WHAT YOU DID

QR code for Master Plant Inventory in Excel

I worked with so many amazing volunteers within Durango Botanic Gardens who helped me classify plants around the garden to achieve the most accurate information possible.

In this photo I am using a Trimble GPS unit, which is a high-accuracy field data collection device. I used a Trimble to collect plant locations with 4 cm accuracy for the GIS map.

I ended up collecting **927** plant points using the Trimble.

QR code for Final DBG Map

I created the master plant inventory by compiling existing garden records with data collected in the field. I organized plant names, researched missing attributes such as water requirements, native status, and mature size, and reviewed the data for accuracy and consistency.



I created the final map in ArcGIS by building and organizing layers for the different features throughout the gardens. I used the Join Features tool to connect the master Excel plant inventory to the plant points on the map. I then used ArcGIS Experience Builder to turn the completed map into an interactive resource where users can explore the gardens and view information about individual plants.

WHAT YOU LEARNED

Data Management
One of the biggest things I learned during this internship was how GIS can actually be used outside of the classroom. I gained hands-on experience collecting spatial data and managing large amounts of plant information. Since this map will be used for decades to come, I also learned how important it is to keep data accurate and organized.

Problem-Solving and Connections

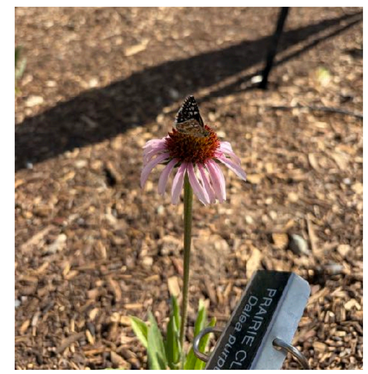
This internship taught me how to work smarter and problem-solve when challenges came up. I learned to take advantage of the resources around me and became more comfortable asking for help when needed. By working with City of Durango employees, DBG volunteers, and my mentor Heather Houk, I learned the importance of building connections and collaborating with others to find solutions.

Plants and Sustainability

I also gained a better understanding of plants and sustainable landscaping in Southwest Colorado. Working with the garden's plant collection exposed me to many different species and helped me understand characteristics such as water requirements, native status, mature size, and suitability for the local climate. This showed me how thoughtful plant selection can support water conservation and more sustainable landscapes.

Professional Growth

This internship also helped me become more confident working independently. I learned how to manage a large project from start to finish and make decisions on my own. Having the responsibility of creating something that will continue to be used by the gardens helped me grow more confident in my skills and abilities.The experience also helped me to better understand how my interests in GIS and sustainability can overlap in a future career.





NEXT STEPS

Although my summer internship has come to an end, the map was created so it can continue to grow with the Durango Botanic Gardens. As plants are added, removed, or changed, the inventory and map can be updated to reflect those changes.

This internship helped me better understand what I want to pursue after graduation. Moving forward, I hope to continue building my experience in GIS and sustainability while exploring careers that combine environmental work with problem-solving.