

# FINAL REPORT

Elvenia J. Slosson Endowment Fund  
2007-08 Grant

## Project Title

Geographic Information System (GIS) for the Demonstration Gardens  
at the UC Davis Arboretum

## Principal Investigators

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## Report Scope

This is a FINAL report for work performed from 7/1/2007 to 6/30/2008.

## Introduction

During the past decade, the UC Davis Arboretum has made an institutional commitment to educate regional audiences about environmentally-appropriate gardening. In 2001-02, the Arboretum carried out a long-range planning process and produced a Ten-Year Plan 2002-2012. The goals identified in the project are to 1) provide an exemplary place of beauty, learning, and environmental stewardship as a UC Davis campus emblem; 2) inspire and educate visitors about the natural world and appropriate horticulture in the Central Valley and beyond; 3) strengthen the Arboretum's museum function and scientific and academic value; and 4) disseminate the expertise of UC Davis to the regional community and promote environmental responsibility as a major outreach arm of UC Davis.

Although we have nearly 100 acres of scientific collections that support teaching and research at UC Davis, the four demonstration gardens at the UC Davis Arboretum attract much attention from visitors and the local media. Here we showcase the most successful horticultural plants for our region and provide integrated educational materials—brochures, exhibits, plant labels, and tours—to celebrate the “best of the best” for the Arboretum visitor.

In 2006, we received funding from the Institute of Museum and Library Sciences (IMLS) to map the woody plant collections at the UC Davis Arboretum. However, our most heavily visited collections—the Arboretum Terrace Garden & Lois Crowe Patio, the Carolee Shields White Flower Garden & Gazebo, the Ruth Risdon Storer Valley-Wise Garden (Figure 1), and the Boathouse Garden—were not mapped as part of this federally funded project. In 2007-08, Slosson Endowment funding permitted us to georeference the specimens in these gardens and produce accurate living collection maps of these important gardens.

## Goals and Objectives

Several key goals guided our work. First, in order to support the multiple museum functions at the UC Davis Arboretum—that is, the preparation of teaching materials for labs, classes, and public workshops; the preparation of plant labels, exhibits, and

brochures—excellent plant record and mapping systems are critical. Our first goal, then, was to have a final map for each demonstration garden with accurately located plant specimens, with each mapped plant linked to the plant records systems. Our plant records are critical support systems for teaching and research—they include all the provenance details about each plant in the collection. This in-house map would provide the 'raw data' needed to prepare the education materials for these demonstration gardens. Second, we wished to make the plant records system—the inventory of living plants—available on the web for our visitors.

Finally, we wished to have digital maps of the four demonstration gardens available for downloading, printing, and searching by any visitor to our website. We felt that web access to these popular gardens was a high priority, as we seek to provide new services to our visitors, saving them the trouble of directly contacting the Arboretum staff and needing to arrange a special trip in order to have access to these maps of the demonstration gardens.

### **Work Completed**

In order to meet these goals, our project leaders organized student GIS teams to prepare geo-referenced maps for the demonstration gardens using detailed aerial photography and engineering drawings and then "shooting" the location of each plant, using GPS equipment, in order to collect latitude/longitude location information (Figure 2). Student staff worked under the direction of the Arboretum's GIS Manager to compile the tabular and spatial GPS data collected by the mapping teams, "clean up" and verify data, and standardize all data formats. Detailed first drafts of maps were prepared and then field checked. Every location was verified. The GIS Manager designed map layout and presentation details for all both printed and web-based maps of the demonstration gardens.

As student teams collected field data, the Curator at the UC Davis Arboretum completed the plant records transfer to our plant records software, BG-Base, and created a searchable, web-based database first in-house, and then, after review and revision, published a searchable database of the living inventory online. The Curator worked with BG-Base specialists and web designers to create new search pages for the Arboretum's Plant Records system. Both large maps (plotted maps) and map books (bound, 8.5 x 11" maps) were also produced. Digital versions (Adobe Acrobat PDF format) of the maps were created and provided to the web design consultants for posting on the UC Davis Arboretum website (Figure 3).

A few final tasks remain from the original scope of the project. These four perennial demonstration gardens are intensively planted and the actual numbers of specimens in each bed exceeded our original estimates. At the conclusion of the field season and grant funding, three of the four demonstration gardens are entirely complete. However, the scope of work exceeded the budget for this grant, but just by a small amount. Although the student crew collected location data for each plant in the popular Arboretum Terrace—that is, geo-referenced (lat/long) information was collected along with information on the plant name, accession number, etc by the student mapping crews—the plant names are not yet "placed" on the digital map, a time-consuming and manual process. However, we are confident that we will be able to find the funds to complete this final step (costs include funding only an estimated 3-4 weeks of part-time student work) in January 2009. We have submitted both internal and external requests for the funds needed.

## **Discussion**

The maps of the demonstration gardens were immediately valuable to both the UC Davis Arboretum staff as they prepared tours, gathered teaching materials, and assisted faculty in their use of the collection. This critical 'back-stage' work supports mission-critical work across the institution and integrating these final important collections along with our woody plant inventory greatly enhances the data integrity of our records system. We can now produce complete inventories of our Living Collections, search for plants, and produce specialized maps as needed. In addition, the plant information is intensively used to support public education in numerous ways. For example, the Arboretum Curator works closely with the UC Davis Arboretum education team to export data for use by other staff in plant label production, plant information cards (specialized plant labels with horticultural information), specialized brochure and list preparation, and to prepare reference materials that are intensively used in Collection Development meetings which are attended by both internal and external partners.

In the fall of 2008, in a closely aligned project, the UC Davis Arboretum redesigned and launched a new visitor-centered web site. The Curator and GIS Manager worked closely with the web design specialists to prepare digital maps (PDF format) for the demonstration gardens, as well as a searchable plant records system online, based on our BG-Base system. This new system has been recently launched, making the maps and lists of the demonstration gardens available online for the first time for the curious web surfer, the home gardener, the horticultural professionals, and the faculty and students of UC Davis. We look forward to refining both the maps and the new web-based system in response to the feedback from this community. Follow this link to view the maps: [http://arboretum.ucdavis.edu/collections\\_database.aspx](http://arboretum.ucdavis.edu/collections_database.aspx)



Figure 1. View of the Ruth Risdon Storer Garden



Figure 2. Student teams used GPS equipment to collect latitude and longitude location information for individual plants in the arboretum.

