

Acacia Grove Expansion and Renovation at the UC Davis Arboretum

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Introduction

In the UC Davis Arboretum, the Eric E. Conn Acacia Grove displays 34 species of acacias from Australia, Africa, and the Americas. It is a popular area, particularly in spring when visitors walk through clouds of brilliant yellow, fragrant blossoms. Away from California's coastal counties, acacias are not widely used in horticulture, since many species are not tolerant of our winter cold. The Arboretum lost more than half of its acacia collection in the devastating "hundred-year" freeze of 1990, when temperatures remained below freezing for more than a week. In an effort to strengthen this unique collection and identify acacias with horticultural promise for inland California, **we proposed to expand and renovate our acacia collection with species and cultivars reported to be frost tolerant, test them under Central Valley conditions, and educate Arboretum visitors about their horticultural value.**

Acacias are a diverse group of species, mainly trees and shrubs, found in Australia, Africa, Madagascar, throughout the Asian-Pacific region and in the southwest United States, Central and South America. There are some 1,350 species in the genus *Acacia* worldwide, and close to 1,000 of these are native to Australia, where they are known as wattles. Acacias occur naturally in an extraordinary range of habitats from sea level on coastal plains to subalpine zones and from arid climates to high rainfall regions at the rainforest margin.

Most acacias are heat and drought tolerant and many would make excellent garden plants for California's Central Valley. They range in habit from prostrate and low-growing species to larger shrubs and shade trees. Valued primarily for their spectacular late winter and early spring bloom, they are also particularly useful for providing quick growth to fill in a new garden or block an unwanted view. Their horticultural virtues also include low water use, low maintenance needs, tolerance of most soil types, and fragrant flowers. They have no serious pests in cultivation in California. Acacias are a good source of pollen and provide food for honeybees and other beneficial insects. The seeds are also an important source of food for birds. In Australia, some species are grown commercially for cut flowers and foliage.

The UC Davis Arboretum has a strong institutional commitment to educating regional audiences about environmentally-responsible 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. This project has been an important step toward meeting each of those objectives.

The UC Davis Arboretum is uniquely positioned to educate Central Valley gardeners. The Arboretum has been selecting, growing, and testing plants under Central Valley conditions for 60 years. There is no other public garden with documented collections or educational programming in the region. Arboretum staff are experienced as horticulturists and as educators, and have a strong base of support in the region, with an active and dedicated community support group, the Friends of the UC Davis Arboretum. Further, the Arboretum can provide a link to the resources of the University of California at Davis, one of the premier plant science research universities in the world.

Goals and Objectives

Our Ten-Year Plan for 2002-2012 has a strong emphasis on creating a visitor-centered garden. Our objectives are to enhance the visitor experience by developing the collections and display gardens, adding interpretive exhibits and orientation signage, and improving visitor comfort features. **We planned to renovate the Acacia Grove using the principles of visitor-centered informal education**, to enhance the visitor experience and increase the educational value of the collections. The proposed project had several components:

1. Expansion of the Acacia Grove with the addition of new acacia species that are reported to be frost tolerant. The Arboretum's horticultural staff identified more than 50 taxa of *Acacia* that fit the criteria for this project. We planned to order and propagate wild-collected seed where possible, and buy in horticultural cultivars. The new specimens would be accessioned and labeled, and become part of the scientific collections of the Arboretum. Additionally, the banks of this section of the Arboretum would be planted for erosion control and to create a more natural appearance.
2. Addition of a new automatic irrigation system for the Acacia Grove. The new system would provide more precise control and would use a larger number of smaller, low-impact sprinkler heads than the existing system, for more even coverage and better protection for plants. Irrigation would be installed by the Arboretum's Landscape Manager, with the help of student assistants.
3. Construction of a secondary path that will allow visitors to get closer to the collection while avoiding soil compaction and protecting shallow roots. Previously visitors could walk the Acacia Grove along a single path that parallels one edge of the roughly 200 ft. wide grove. We planned to install a narrower secondary path that would wind through the grove to bring

visitors closer to the plants and provide an immersion experience. The path would be similar to the new path in the Arboretum's Redwood Grove, with steel edging and a decomposed granite surface.

4. Installation of benches to increase visitor comfort and enjoyment of the collection. We identified locations for four benches. These would be the standard Arboretum style, with curved metal bases and redwood slat seats. These benches are sturdy, unobtrusive, and easily repaired if damaged or defaced. Benches would be installed and maintained by Arboretum staff.
5. Design and installation of a collection orientation sign, wayfinding signs, a visitor map, collection identification signs, and a series of expanded horticultural labels that would help Arboretum visitors learn about acacias, their value for Central Valley gardens, and how to grow them successfully. The orientation and wayfinding signs would be similar to those in the Mary Wattis Brown Garden of California Native Plants, produced in 2005 with funding from the Slosson Fund. The collection identification signs and the expanded horticultural labels would be new designs, which would in the future be used throughout the Arboretum. All signs would be produced by Geographics, a professional exhibit design firm with whom we worked to create the award-winning interpretive signs for the Arboretum Terrace home demonstration garden, the Redwood Grove, and the California native plant collection, as well as the recently-installed Arboretum All-Stars signs. Signs would be installed and maintained by Arboretum staff. The support of the Slosson Fund would be acknowledged on all signs.
6. Testing new acacia species for horticultural merit under Central Valley conditions. We planned to keep detailed records on propagation, planting, and irrigation schedules, and evaluate the condition and performance of all species after the first year and second year, and periodically thereafter. Results would be published on our website and/or in the quarterly *UC Davis Arboretum Review*.

Results and Discussion

1. We have planted over 50 new Acacias in the Acacia Grove – representing 25 species. Most of these are new to the Grove and are performing well after 9 months in the ground. This first phase of planting was largely plants purchased from California and Arizona nurseries. Arboretum volunteers were involved in the acacia planting, allowing Arboretum staff to provide tree planting and young tree pruning training during the planting day. Table 1 lists the Acacias planted so far and their current condition.

We also have many species growing in the nursery that will be added to the grove when they are large enough. Most of these were grown from wild-collected seed obtained from Australian seed banks located in cooler regions of the continent like Victoria with a similar temperature range as Davis.

We also planted over 10,000 grass plugs of native bunchgrasses to add beauty and control erosion on the banks of the waterway. Wildflower seeds of native lupines were also sown in bare areas.

Table 1. New Acacias

Scientific Name	Common Name	Range	Condition
<i>A. baileyana</i> 'Purpurea'	purple-leaf acacia	garden origin (southeastern Australia)	Thriving
<i>A. berlandieri</i>	guajillo	south Texas and Mexico	All dead
<i>A. boormanii</i>	Snowy River wattle	southeastern Australia	Thriving
<i>A. constricta</i>	mescat acacia	arid regions of southwestern USA and Mexico	Growing
<i>A. covenyi</i>	blue bush	southeastern Australia	Thriving
<i>A. craspedocarpa</i>	leatherleaf acacia	western Australia	All dead
<i>A. cultriformis</i>	knife acacia	eastern Australia	Thriving
<i>A. dealbata</i>	silver wattle	southeastern Australia including Tasmania	Thriving but parts chlorotic
<i>A. denticulosa</i>	sandpaper wattle	rare plant from western Australia	Growing in nursery
<i>A. farnesiana</i>	sweet acacia	arid regions of southern USA to Argentina	Thriving
<i>A. farnesiana</i> cv., Sierra Sweet™	Sierra Sweet™ acacia	garden origin (arid regions of southern USA to Argentina)	Thriving
<i>A. fimbriata</i>	fringed wattle	eastern Australia	Thriving
<i>A. greggii</i>	catclaw acacia	southern California to Texas	Thriving
<i>A. iteaphylla</i>	willow-leaved wattle	southern Australia	Thriving
<i>A. pendula</i>	weeping acacia	eastern Australia	Growing in nursery
<i>A. podalyriifolia</i>	pearl acacia	eastern Australia	Some thriving
<i>A. pravissima</i>	Ovens wattle	southeastern Australia	Thriving
<i>A. redolens</i> cv., Desert Carpet®	Desert Carpet® acacia	garden origin (southwestern Australia)	Some thriving
<i>A. rigidula</i>	blackbrush acacia	southern Texas and Mexico	Growing
<i>A. rubida</i>	red-stem wattle	southeastern Australia	Thriving
<i>A. salicina</i>	willow acacia	widespread in eastern Australia	Thriving
<i>A. schaffneri</i>	twisted acacia	southern Texas to sub-tropical Mexico	Thriving
<i>A. sclerosperma</i>	limestone wattle	western Australia	Growing in nursery
<i>A. smallii</i>	hardy sweet acacia	Florida, southern Texas, Arizona, southern California, Mexico	Thriving
<i>A. spectabilis</i>	Mudgee wattle	southeastern Australia	Thriving
<i>A. stenophylla</i>	shoestring acacia	stream banks of inland Australia	Thriving
<i>A. subcaerulea</i>	blue-barked acacia	southwestern Australia	Growing in nursery
<i>A. terminalis</i>	sunshine wattle	southeastern Australia	Growing in nursery
<i>A. trinervata</i>	three-nerved wattle	southeastern Australia	Growing in nursery
<i>A. tysonii</i>	Tyson's wattle	western Australia	Thriving
<i>A. vestita</i>	hairy wattle	southeastern Australia	Thriving



Acacia spectabilis and *A. covenyi*



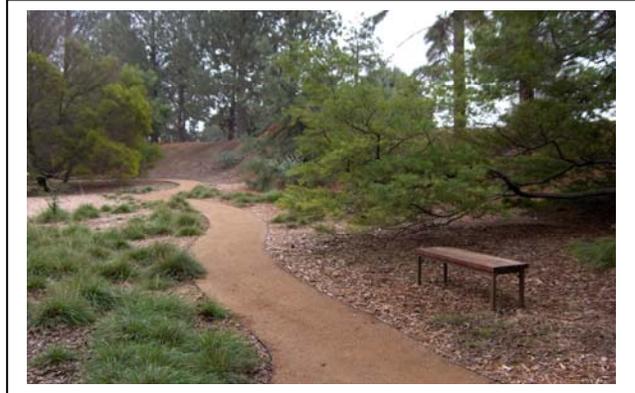
Acacia cultriformis with needlegrasses

2. A new irrigation system that covers the entire Grove was installed in the summer of 2006. It is a major improvement over the old manual system because it is controlled by a central irrigation computer allowing for easier water scheduling throughout the year. The new system features strategically placed rotor heads on the flat upper areas, and high-efficiency low-flow MP Rotator sprayers on the slopes to minimize erosion. The system is also tied to a weather station to allow ET-based irrigation which improves efficiency. Plant health has improved with the addition of the new system.
3. A new decomposed granite path was constructed in the summer of 2006. This new path winds through the clusters of acacias, allowing visitors to get immersed in the trees and see the new plantings up close. The path was constructed using heavy-duty steel edging and quality decomposed granite with a stabilizer added for long life. Many visitors report their enjoyment of the new path and the collection enhancement opportunities that it allows.



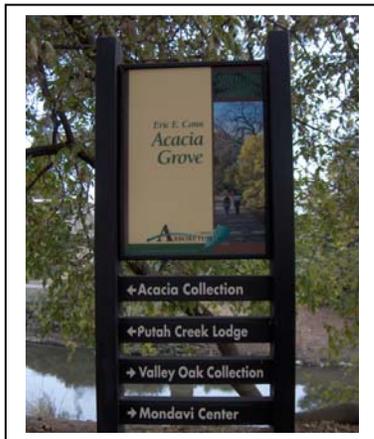
New decomposed granite secondary pathways were added to the grove to improve access.

4. Four new benches were added to the grove in the spring of 2008. The benches consist of a steel frame and with a wooden top. The steel frames were fabricated locally in the same design as the new benches in the Arboretum's Redwood Grove. The bench tops were made from reclaimed Acacia wood that was milled from fallen urban blackwood acacia trees (*A. melanoxyton*). This wood is known for its beauty and durability and we are excited to test its performance in the Arboretum.

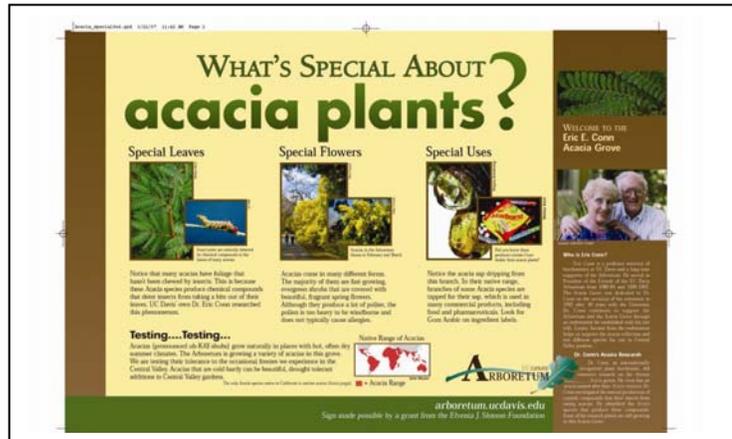


New benches in the Acacia Grove of the UC Davis Arboretum

5. Wayfinding signs and interpretive signs were added to the Acacia Grove in the autumn of 2007. We added Collection ID/Wayfinding signs at both ends of the grove as well as an Arboretum visitor map sign in the middle. We also added a collection orientation sign called "What's Special About Acacia Plants?" that shares information about the history of the grove as well as interesting facts about acacia leaves, flowers, and uses. We have developed another series of interpretive signs that are currently in production and will be installed in the garden in spring of 2009. The five signs have the following themes: "Should I Plant an Acacia?," phyllode facts, acacia diversity, current and historical uses for acacia-based materials, and acacia traits that protect against browsing animals. Plant labels are also in production and will be added to all acacias in spring 2009.



Wayfinding Sign



Acacia Grove Orientation Sign

6. The Acacia Grove is one of our most important scientific collections and is a valuable testing ground for the horticultural merit of acacias in the Central Valley of California. We continue to keep detailed records about each member of the grove including provenance and taxonomy and propagation records are kept for all acacias grown in our nursery. Information is also being recorded during seasonal inspections of the specimens in the grove. We have already published an article in the UC Davis Arboretum Review about the success of this project and the most promising acacias for Central Valley gardens.

In conclusion, this project has been a very successful one as it has added to aesthetic, scientific, and visitor value of the UC Davis Arboretum. Before this project, the Acacia Grove was a neglected stretch in the middle of the Arboretum. Now it is revitalized with new pathways, signs, and benches. Most importantly, there are dozens of new trees with more to come, and thousands of new grasses. While much progress has been made in this renovation, the project will continue into the future as there are still many new acacias to test and enough room to do so. Staffing changes slowed the interpretive phase of this project so we will update this report when the interpretation is completely installed. We thank the Slosson Fund for its continued support.



Volunteers and staff planting new acacias in the UC Davis Arboretum