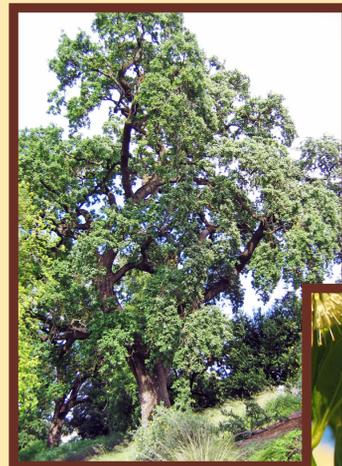


# WELCOME TO THE Arboretum GATEway Garden

This garden is a connection point between the UC Davis campus and the City of Davis, showcasing local native plants in a striking modernist design.

## Explore how the garden is...



Valley oak



Buckeye butterfly on buttonbush

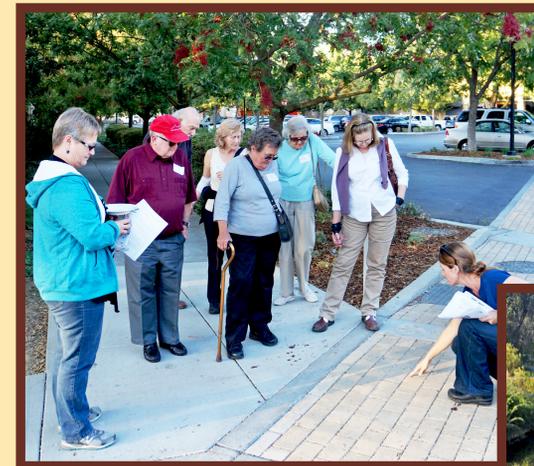
John Anderson, Hedgerow Farms



Community volunteer helping at a planting event



Enjoying the community-created mural



Visitors learn about permeable paving in the walkway



Bench made from a fallen urban street tree

### Celebrating Our Local Heritage

The garden celebrates our local natural and cultural heritage, with plants that are native to our local region (within 20 miles of this site). Look for exhibits about the history of Putah Creek, local wildlife, and the importance of native plants to the Patwin people, the original inhabitants of the area. Discover where you can visit natural habitat areas nearby.

### Strengthening Community Connections

The garden was created through partnerships with local residents, businesses and non-profits. It was planted by volunteers and features beautiful community-built art, with a landmark gateway sculpture and a mural celebrating our native valley oaks. From here, you can explore the Putah Creek Parkway, the rest of the Arboretum, the UC Davis campus, and downtown Davis.

### Building a Sustainable Future

The garden demonstrates best practices in sustainable landscape design. As you walk through the garden, look for strategies we're using to reduce greenhouse gas emissions, conserve water, protect water quality, reduce waste, and provide wildlife habitat. Re-introduced local native plants provide habitat for native insects and wildlife. Permeable paving, bioswales, and a rain garden minimize storm water runoff from the site. Using recycled materials conserves resources and reduces pollution.



Alice Cummings

### Urban Greening Project

Starting in 2011, the UC Davis Arboretum and Public Garden, the City of Davis and partners developed a series of urban greening improvements in this area, including:

- Creating the Arboretum GATEway Garden with local native plants, storm water management features, educational signage, and a sculptural gateway
- Reconfiguring bike and pedestrian paths to improve access and circulation
- Restoring local native plants to the Putah Creek Parkway for wildlife habitat
- Installing green parking lot retrofits at Davis Commons to increase storm water infiltration

### Project Partners

UC Davis Arboretum and Public Garden  
City of Davis  
Yolo County Resource Conservation District  
Tree Davis  
Fulcrum Property  
Nishi Gateway LLC  
Dowling Properties  
Community Built Association  
Friends of the UC Davis Arboretum and Public Garden  
Whole Foods Market  
Community volunteers

### Project Funders

California Prop. 84 Urban Greening Grant Program  
UC Davis Campus Planning and Community Resources  
U.S. Institute of Museum and Library Services  
City of Davis  
Pacific Gas and Electric Company  
Stanley Smith Horticultural Trust  
T.S. & K.D. Glide Foundation  
Stuart Foundation  
Rotary Club of Davis

### Project Designers

Cunningham Engineering  
Lutsko Associates Landscape

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**ARBORETUM AND PUBLIC GARDEN**

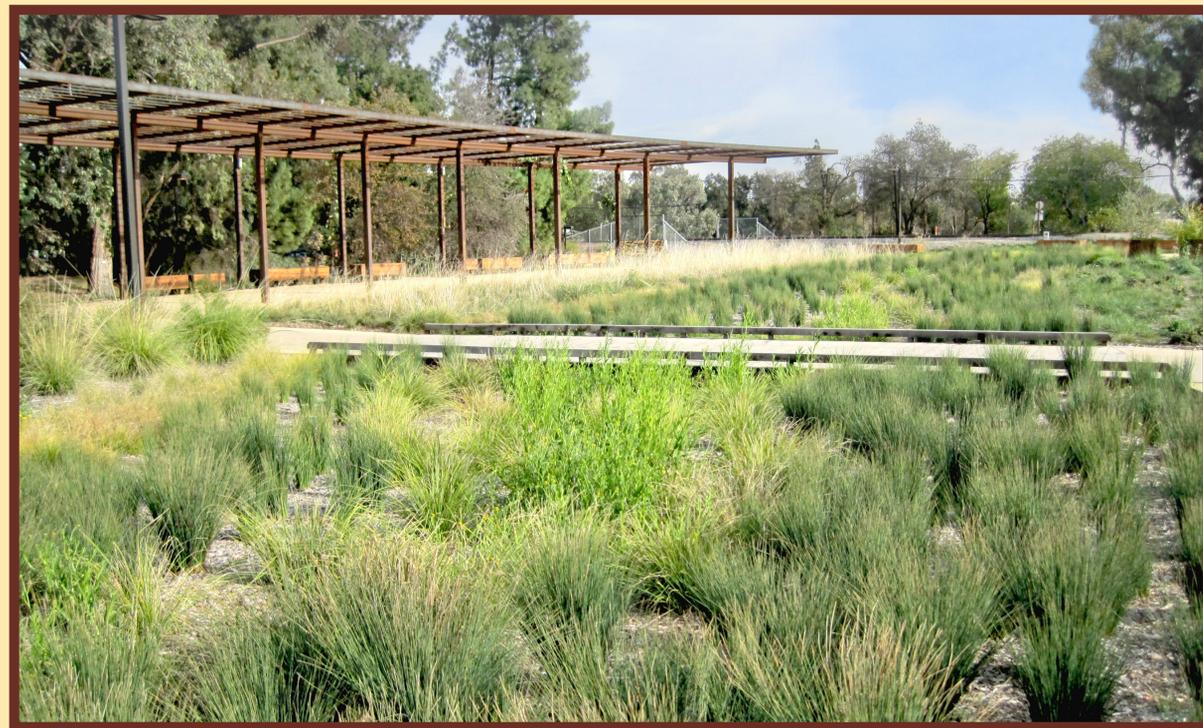
*Arboretum GATEway Garden*

*arboretum.ucdavis.edu*

*This sign made possible by a grant from the Institute of Museum and Library Services*

# BIOSWALE: nature's water filter

This **bioswale (BY-o-swale)**, a shallow channel filled with plants that mimics a natural wetland, filters storm water runoff before it reaches the Arboretum Waterway.



## Bioswales provide some of the same benefits as natural wetlands.

### Reduce Storm Water Runoff

Plants and soil in bioswales absorb water and reduce the amount that flows into storm drains and waterways downstream.

### Create Habitat

Bioswales planted with native plants can provide food and shelter for beneficial insects, birds, reptiles and amphibians.

### Recharge Groundwater

The water flowing through bioswales filters down into groundwater supplies that people use for drinking and trees can access for growth.

### Filter Pollutants

As water flows through the bioswale, sediment and chemical contaminants get filtered out. Micro-organisms in the roots of plants and in the soil help break down pollutants.

## Bioswales can protect water quality in a home or larger-scale landscape.

### What types of plants are best for bioswales?

- Native or non-invasive
- Tolerant of both winter floods and dry summer conditions
- Useful for wildlife habitat

Many native wetland plants, such as the ones in front of you, share these qualities.



**Slender sedge**  
(*Carex praegracilis*)



**Rosilla**  
(*Helenium puberulum*)



**California Gray Rush**  
(*Juncus patens*)



**Naked sedge**  
(*Carex nudata*)

CSU Chico Ecological Reserves



Alice Cummings

## Central Valley Wetlands and the Pacific Flyway

The Pacific Flyway is a migratory route used by over a billion birds every year between Alaska and South America. Wetlands in California's Central Valley are a crucial part of this great avian highway, providing habitat for wintering birds such as sandhill cranes, snow geese, and tundra swans.

Since 95% of native wetlands in the Valley have been lost to agriculture or urban development, farm fields and managed landscapes now provide essential habitat for migratory birds.



Dave Feliz/CDFW

To see nearby natural wetlands, visit the Yolo Bypass Wildlife Area, south of Interstate 80 between Davis and Sacramento.

[yolobasin.org](http://yolobasin.org)

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Arboretum GATEway Garden

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This sign made possible by a grant from the Institute of Museum and Library Services

# HAVE YOU seen us?

The land around creeks and rivers, called the **riparian zone**, provides multi-layered habitat for many native animals.



Alice Cummings

## Why is Riparian Habitat Important?

- Riparian forests support a greater diversity of wildlife than any other habitat type in California.
- Riparian areas provide critical corridors for wildlife migration.
- Riparian vegetation improves water quality by filtering pollutants from urban and agricultural runoff.

## What's Happening to Central Valley Riparian Habitats?

Riparian forest once lined the rivers and flood plains in California's Central Valley, extending up to several miles out from the river's edge. Ninety-five percent of this habitat has been lost due to human activity since the arrival of Europeans.

## Building a Sustainable Future

In recent decades, scientists, government agencies, and conservation organizations have been collaborating on large scale projects to protect and restore riparian habitat in the Central Valley. Here on campus, researchers use the UC Davis Putah Creek Riparian Reserve as a living laboratory for studying riparian habitat restoration.

[putahcreek.ucdavis.edu](http://putahcreek.ucdavis.edu)

**UCDAVIS**

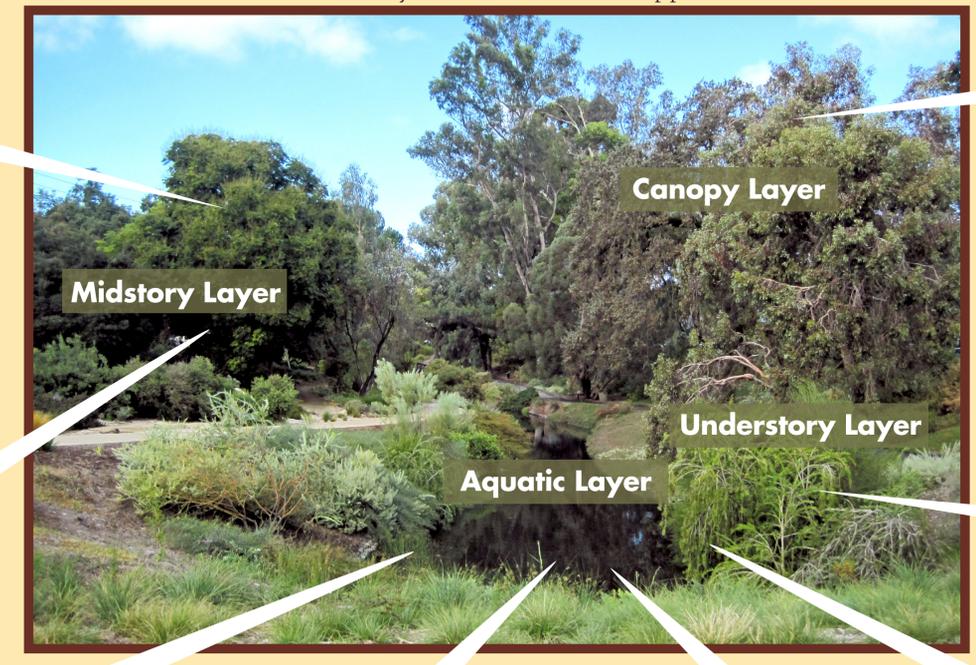


**ARBORETUM AND PUBLIC GARDEN**

Lift the flips to learn about some animals you might see here and how they use the layers of vegetation in the riparian habitat.

## Riparian Habitat Structure

This part of the Arboretum is no longer a native riparian habitat, but it has a similar multi-layered structure that supports native wildlife.



**Western Scrub Jay**  
*Aphelocoma californica*

**Swainson's Hawk**  
*Butea swainsoni*

**Pipeline Swallowtail**  
*Battus philenor*

**Desert Cottontail**  
*Sylvilagus audubonii*

**North American River Otter**  
*Lontra canadensis*

**Western Pond Turtle**  
*Actinemys marmorata*

**Mallard**  
*Anas platyrhynchos*

**Great Egret**  
*Ardea alba*

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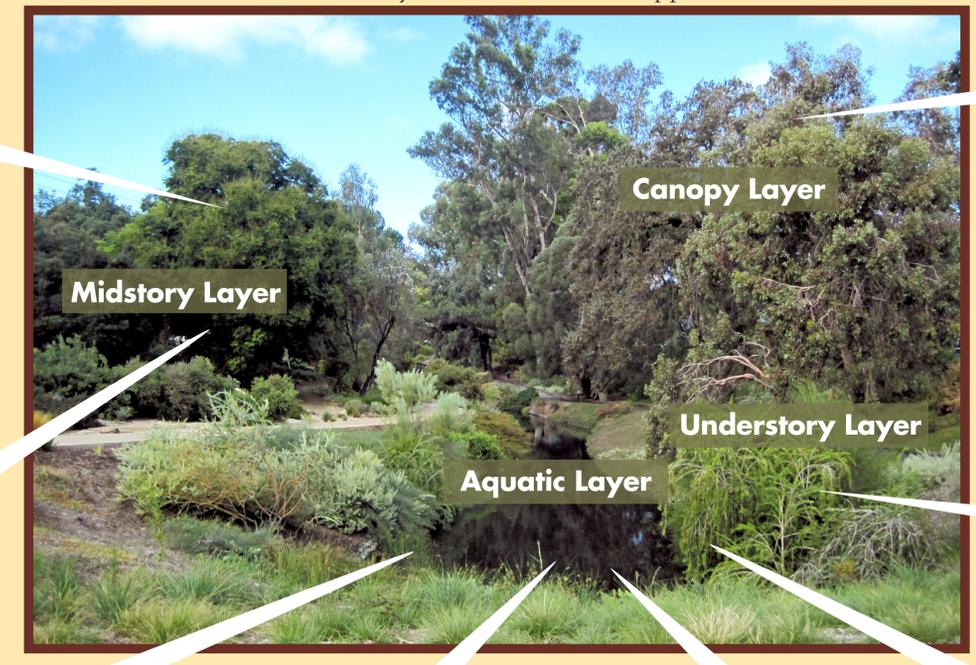


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Scrub jays can be easily seen in the midstory layer of the riparian habitat, feeding on insects, fruit, nuts, and berries. They are notorious for stealing acorns from other birds.



Msulis

Swainson's hawks nest high in the canopy layer of the riparian habitat. They soar low and hover over pastures and grasslands as they scan for their prey—insects, small mammals and birds.



Jon Lutz, birds4colorado.com

Pipevine swallowtail butterflies can be spotted flying in the midstory layer of the riparian habitat. Pipevine caterpillars eat the leaves of the California pipevine plant (*Aristolochia californica*).



Desert cottontails forage and rest in the understory layer of the riparian habitat. Pregnant females build a nest by digging a hole in the ground and lining it with grass and fur.



Tom Blackwell

North American river otters hunt in the aquatic layer of the riparian habitat and live in burrows close to the water. They eat fish, amphibians, crustaceans, birds, insects and fruit. Otters have been seen in the Arboretum Waterway since 2011.

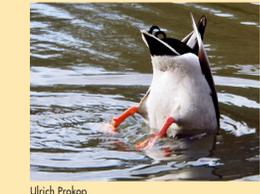


Western pond turtles live in the aquatic layer of the riparian habitat and can often be seen basking on rocks or logs to soak up the sun. They can live to be 50 years old.



Jerry Kirkhart

Mallard ducks swim on the surface of the aquatic layer and nest in the understory of the riparian habitat. Mallards are "dabbling ducks"—they feed in the water by tipping forward and grazing on underwater plants.



Ulrich Prokop

Great egrets wade in shallow water in the aquatic layer to hunt fish, frogs, and other small aquatic animals, and roost high in the canopy in large colonies.



Brocken Inaglory

**Arboretum GATEway Garden**

[arboretum.ucdavis.edu](http://arboretum.ucdavis.edu)

This sign made possible by a grant from the Institute of Museum and Library Services

# THIS PLANT HAS A LOT OF tricks up its leaves

Lift the flips to see the many ways Native Californians have traditionally used the versatile tule plant

Sleeping



Storage



Clothing



Housing



Food



Travel



Hunting



Toys



Joy Elton



tule (*Schoenoplectus acutus*)

The long green stems of the tule (TOO-lee) plant growing in the container to your right can be made into many useful items. Tule stems are typically harvested in summer or fall before the plant goes dormant in the winter.



Alice Cummings

## Where do tules grow?

Tule plants grow in freshwater marshes throughout western North America and can reach more than 16 feet tall.

## Traditional uses of native plants

The study of how people of a particular culture or region make use of plants is called ethnobotany. The Patwin people were the first inhabitants of this area, and their descendants continue to live in the Central Valley today.

To learn more about traditional Patwin uses of native plants, we invite you to visit the Native American Contemplative Garden in the UC Davis Arboretum.

## Discover Our Local Heritage



Claire Daughtry

To see tule plants in the wild, visit the Yolo Bypass Wildlife Area, south of Interstate 80 between Davis and Sacramento.

[yolobasin.org](http://yolobasin.org)

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Arboretum GATEway Garden

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Terry Richard/The Oregonian

Whole or split tules can be twisted to make ropes or woven into mats.

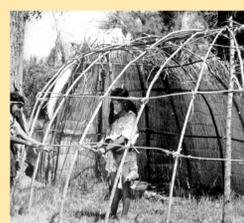


Baskets woven from tule stems can be used for gathering and storing food and water.



Phoebe A. Hearst Museum of Anthropology

Tule stems can be woven into traditional clothing and moccasins.



Traditional houses are framed with saplings and thatched with tule.



Tule roots can be harvested, dried, and pounded into flour for making mush.



Rusty Bowman, EarthenExposure.com

Tule stems can be twisted and woven to make toys for children.



Joy Elson

The long green stems of the tule (TOO-lee) plant growing in the container to your right can be made into many useful items. Tule stems are typically harvested in summer or fall before the plant goes dormant in the winter.



tule (*Schoenoplectus acutus*)



Elena Belsky

Tule stems can be used to build buoyant, resilient reed boats.



Churchill County Museum & Archives

Tule stems can be used to make decoys for hunting waterfowl.

Arboretum GATEway Garden

[arboretum.ucdavis.edu](http://arboretum.ucdavis.edu)

This sign made possible by a grant from the Institute of Museum and Library Services

# IF THIS creek COULD speak

It would say, "I've lost my flow!"

The Arboretum Waterway used to be part of the north fork of Putah Creek, but now it's a pond with no natural flow.

## What happened?

### Before 1800

The Patwin people lived here in villages along the banks of Putah Creek for thousands of years until the early 19th century.



### 1870s

Local residents used horse-drawn scrapers to divert the creek south of Davis to prevent periodic flooding in heavy winter flows.



### 1939

A major flood caused considerable damage to the early UC Davis campus.



### 1948

The Army Corps of Engineers permanently sealed off the north fork of Putah Creek to prevent future flooding.

### 1968

With support from UC Davis students, the Arboretum Waterway was widened and dredged to create Lake Spafford and the lagoon at the west end. Paths were paved and footbridges were constructed.



### 2008

A system was devised to route treated water from the campus wastewater treatment plant to the Arboretum Waterway to create flow in order to reduce algae growth and improve water quality.

### 2014

The Arboretum GATEway Garden was built to feature plants native to the lower Putah Creek watershed. The garden's green features help improve water quality in the Arboretum Waterway.



### Going Forward

Arboretum and Public Garden staff and campus experts are continually exploring options for improving water quality in the waterway by increasing aeration, generating water movement, and reducing contaminants in campus runoff.

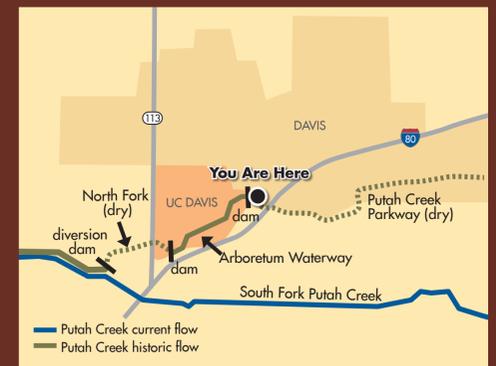


Alice Cummings

## Where did the flow go?

To protect the Davis area from flooding, the north fork of Putah Creek was dammed and the water diverted to the south fork. The Arboretum Waterway, dammed at both ends, is essentially a pond. The lack of water movement in a pond can cause issues such as increased algae growth and low oxygen levels, both of which can affect fish health.

All water that goes into campus storm drains flows into the waterway. Excess water is pumped to the south fork.



## Discover Our Local Heritage



To see the flowing creek, visit the UC Davis Putah Creek Riparian Reserve. [putahcreek.ucdavis.edu](http://putahcreek.ucdavis.edu)

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ARBORETUM AND PUBLIC GARDEN

# CAN YOU find a needle IN A GRASSLAND?

Purple needlegrass (*Stipa pulchra*) once covered the Central Valley floor and surrounding foothills. Now it's hard to find due to habitat loss and competition with invasive species.

This tough perennial bunchgrass tolerates poor soils, endures fires, drought, and occasional floods, and can survive for 100 or more years. It was named the state grass of California in 2004.

**Needle-like awns** (stiff bristles) on the seeds twist as they dry and help drive seeds into the soil.



**Leaves** provide forage for animals, including cattle and over 330 native species, like tule elk and pronghorn antelope.



Tule elk graze on native grasses

**Deep roots** can grow 6-15 feet to reach underground water sources and survive drought. Roots protect soil from erosion and filter water.

## Should I Grow Needlegrass?

Purple needlegrass's ability to spread rapidly by seed helps it survive in the wild, but can make it hard to contain in a typical home garden. Deergrass (*Muhlenbergia rigens*), an Arboretum All-Star and California native plant, is a good alternative for a low-water garden.



Deergrass



## Where are the native grasslands?

**Most are gone.** Less than 1% of the original California native grasslands remain. Today California grasslands are dominated by invasive non-native annual grasses that produce our characteristic golden hills when they dry out in late spring.

## What happened?

Native grasslands disappeared beginning in the 18th century with the arrival of Spanish missionaries. Seeds of invasive Mediterranean grasses were brought in with their livestock, and the invaders eventually spread throughout the state.

## What are invasive species?

A species is classified as invasive if it becomes established and spreads aggressively on its own in an area where it is not native. Common invasive plant and animal species in this area include yellow star thistle, ripgut brome, Eastern fox squirrels, and New Zealand mud snails.

## Discover Our Local Heritage



To see a remnant of California native grasslands and vernal pools, visit the Jepson Prairie Reserve in Dixon, part of the UC Davis Natural Reserve System.

[nrs.ucdavis.edu/jepson](http://nrs.ucdavis.edu/jepson)

**Invasive Species Project**

**Arboretum GATEway Garden**

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PUBLIC GARDEN**



[arboretum.ucdavis.edu](http://arboretum.ucdavis.edu)

Sign funded by the National Science Foundation

# EVERY shovel TELLS A story

Artist Christopher Fennell took recycling to new heights by creating a sixteen-foot-tall, vine-inspired Shovel Gateway out of more than 400 used shovel heads.

**The Shovel Gateway** marks the transition between downtown Davis and the Arboretum and is the first city-funded artwork to be installed on the UC Davis campus. It dovetails with city and campus goals to improve pedestrian and bicycle connections and to promote the campus and downtown area as an arts destination.

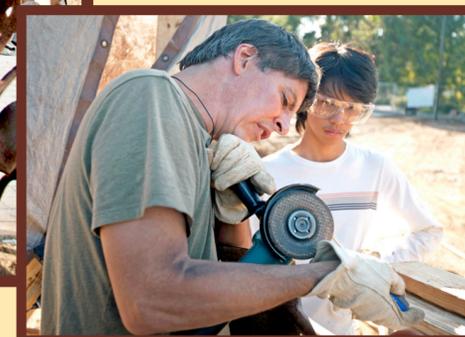


The Arboretum put out a call, and the Davis community responded, donating more than 400 used shovels for the project. Many of the shovels were inherited from previous generations. Every shovel has a story, ranging from service in the Vietnam War to the groundbreaking of Sutter Davis Hospital.



**Fennell**, a sculptor with an engineering background, was selected through a national search. He specializes in creating large-scale public art from cast-off materials.

The use of recycled shovels has special resonance because it recalls the work of faculty, staff, students, and community members who have planted and cared for the Arboretum during its 75-plus years of existence.



UC Davis design students worked closely with the artist (left) throughout the project.



## Strengthening Community Connections



City, campus, and community representatives came together to dedicate the Shovel Gateway.



Donors had a chance to spot their shovels and chat with the artist (right) at the dedication event.



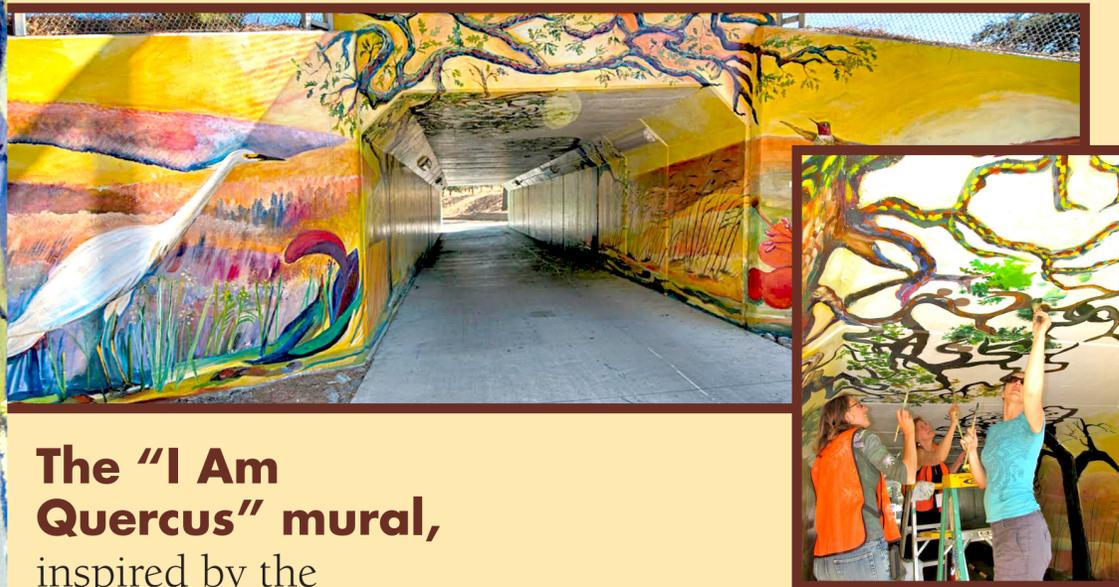
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ARBORETUM AND PUBLIC GARDEN

# MANY HANDS MAKE community-built art

Campus and community partners were involved from start to finish in creating a beautiful mural and art benches that connect the UC Davis Arboretum with the Putah Creek Parkway.



**The "I Am Quercus" mural,** inspired by the Arboretum's heritage valley oaks (*Quercus lobata*), transforms a functional bike tunnel into a canopy of oak branches. Mural elements reflect seasonal changes, Putah Creek, and plants and animals native to the site. Over 100 people helped create this mural.



**The UC Davis Arboretum and Public Garden** initiated the project and led the fundraising effort. Above, Arboretum staff, volunteers, and community members attended workshops to develop themes and create design elements for the mural.



In conjunction with the 2014 **Community Built Association** conference, artist Caryl Yasko (second from left), a master community muralist, taught emerging artists about her technique and engaged dozens of community members in painting the mural.



**Pacific Gas & Electric Co.** employees and their families volunteered to scrape and prime the tunnel surface. A donation from PG&E helped fund the mural project.



**City of Davis** Council-member Lucas Frerichs (left) and Mayor Joe Krovoza spoke at the mural dedication, which brought project partners together to celebrate the adoption of the community-built art into the City's Art in Public Places collection.



## Look for four community-created art benches

as you walk through the Putah Creek Parkway, all within about 1/4 mile of the bike tunnel.

Artists Tom Arie-Donch and Donna Billick led Community Built Association members in designing and constructing four hand-sculpted concrete benches inspired by the native plants and animals of Putah Creek.



Butterfly Bench



Oak leaf bench under construction



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