

STRAWBERRY CREEK

A Walking Tour of
Campus Natural History



University of California, Berkeley

A TOUR OF STRAWBERRY CREEK ON THE UC BERKELEY CAMPUS

THIS WALKING TOUR is a guide to Strawberry Creek on the campus of the University of California, Berkeley. Strawberry Creek is a major landscape feature of the campus, with its headwaters above the UC Botanical Garden in Strawberry Canyon. This tour covers only the central campus and should last about an hour. It begins at Faculty Glade, follows the South Fork downstream, and ends at Giannini Hall along the North Fork. A map with indicated stops is located at the end of this booklet.

A BRIEF HISTORY



Redwood
Sequoia sempervirens

In 1860, the College of California moved from Oakland to the present campus site, purchasing the land from Orrin Simmons, a sea captain turned farmer. Strawberry Creek was one of the main reasons the founders chose Simmons' tract. "All the other striking advantages of this location could not make it a place fit to be chosen as the College Home without this water. With it every excellence is of double value." The creek was named for the wild strawberries that once lined its banks.

The central campus at that time was pastureland and grain fields. Coast live oaks, sycamores, bay laurel trees, and native shrubs lined the banks of Strawberry Creek. Three forks of the creek meandered through the campus. In 1882, the small middle fork draining the central glade was filled to build a cinder running track, now occupied by the Life Sciences Building Addition.

By the turn of the century, urbanization had already begun to affect the creek. Sewage and silt polluted the water. The creek's course was redirected and confined by retaining walls. In places, the creek was diverted into underground pipes called culverts. Development in

the Strawberry Canyon watershed increased the number of impervious surfaces such as buildings, roads, and parking lots. As a result, torrents of storm water runoff during the rainy season (October to April) dramatically increased flows and caused extensive erosion along the stream. Many retaining walls and rock check dams were built to curtail channel downcutting and bank erosion. Conversely, diminished groundwater recharge lowered the baseflow of the creek during the dry season. Strawberry Creek was neither healthy nor natural.

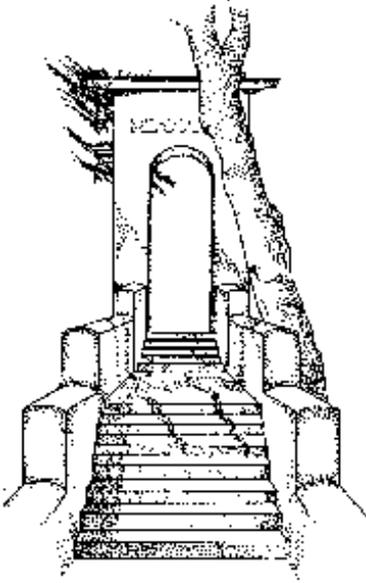
Since 1987, the campus has attempted to restore the natural quality of the creek. Fish and insect populations have been reintroduced and are thriving. There has also been an increased appreciation of the value of the creek to the Berkeley campus. Each year more than 3,000 undergraduates take classes, ranging from biology to engineering, in which the creek plays a central role. At certain times of the year, student art projects stand alongside or even in the creek itself.

Strawberry Creek can be seen above ground at three public locations in Berkeley (east to west): 1) the UC Botanical Garden, 2) UC central campus and 3) Strawberry Creek Park at Bonar and Addison Streets.



1

FACULTY GLADE



The tour begins at the 1910 Bridge near the Faculty Club. Stand above the arch of the bridge, which is dedicated to Phoebe Apperson Hearst. Look at the Latin inscription and note that the second letter is a stylized “U” carved over an original letter “A.” The original word, selected by a classics professor, was “HANC” (for “this”). A student pointed out that the grammatically correct word is “HUNC.” The correction was finally made after the professor retired!

Move down the stairs and listen to the sound of the water. This is one of the prettiest spots along the creek, but as you look upstream or downstream, the scenic view is disrupted by steam ducts crossing the stream. This type of urban encroachment will be present throughout the tour, so you will need to use your imagination to picture what the stream was like before the campus grew so large.

Walk upstream alongside the creek to the Faculty Club. You will see a 5-foot-diameter cement culvert opening, somewhat obscured by ivy. The South Fork emerges here after being carried some 4,300 feet underground from Strawberry Canyon to the campus. On its way, the water in this channel passes underneath the football stadium and across the Hayward Fault zone.

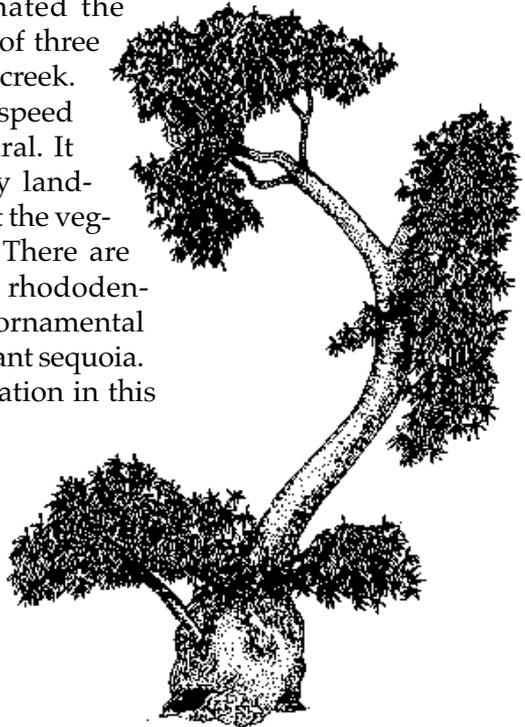
Uplifting along the fault zone created the beautiful and precipitous Berkeley Hills just to the east.

Over many years, movement along the fault damaged the stadium’s sanitary sewer line. When toilets were flushed thousands of times during and after football games, sewage spewed into the creek via storm drains. The guilty sewer was repaired in 1988. What impact do you think raw sewage could have on the creek and the aquatic organisms that live in it?

Walk back towards the bridge along the edge of Faculty Glade, one of the most popular open spaces on campus. The natural amphitheater of the glade has been used for a variety of musical and theatrical performances over the years. Note that Strawberry Creek forms the backdrop for Faculty Glade, once called "Co-Ed Canyon." There is archeological evidence that this area was once the site of an Ohlone Native American settlement that relied on the supply of fresh water and fish in the creek.

The coast redwoods found here and throughout the campus were transplanted from Mendocino in 1905. Redwoods are not native to Strawberry Creek, although they grow naturally in the nearby Oakland hills to the south.

The creek area between the Faculty Club and Stephens Hall is designated the Goodspeed Nature Area, one of three campus nature areas along the creek. It should be noted that Goodspeed Nature Area is not at all natural. It lies in the heart of a formally landscaped English garden! Look at the vegetation along the creek here. There are many pittosporums, azaleas, rhododendrons, and other non-native ornamental plants. There is even a single giant sequoia. Do you think the exotic vegetation in this nature area should be phased out and replaced with native plants?



The old buckeye in the northern corner of Faculty Glade was planted in 1882 and hangs on with great tenacity.

2 WATER STRIDERS

Follow the creek downstream around Faculty Glade. Walk past the brick bridge (the formal entrance to the old Student Union) and behind the statue of former football coach Pappy Waldorf. Stand on the small wooden bridge below and look on the surface of still pools for fascinating insects called water striders. They are probably the most obvious animals that you will see in Strawberry Creek, although dozens of other insect species live among the rocks and in the sediment (such as the larvae of midges and damselflies).

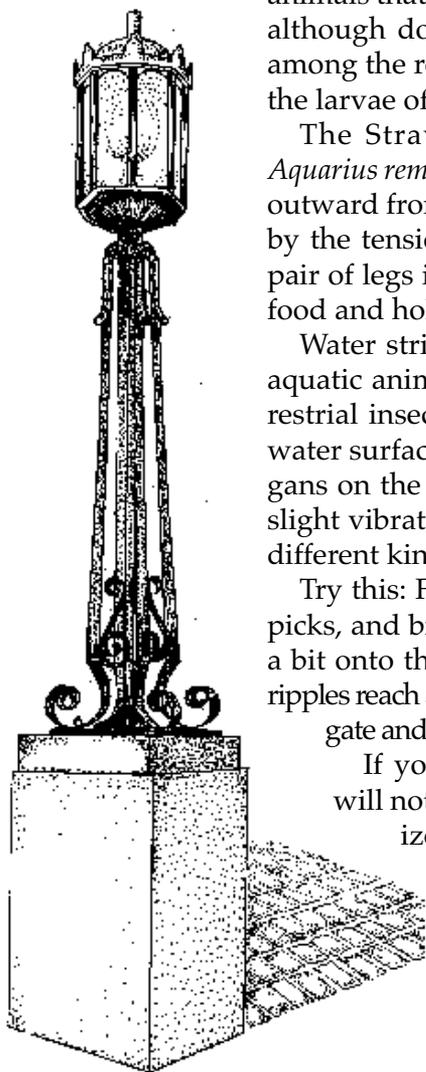
The Strawberry Creek water strider is *Aquarius remigis*. The four long legs that extend outward from the narrow body are supported by the tension of the water surface. The first pair of legs is raptorial; they are used to seize food and hold it while eating.

Water striders occasionally eat other small aquatic animals, but mostly they feed on terrestrial insects such as flies that fall onto the water surface. Water striders have sensory organs on the ends of their legs that can detect slight vibrations and even distinguish among different kinds of prey.

Try this: Find some twigs the size of toothpicks, and break them into fly-sized bits. Toss a bit onto the smooth surface of a pool. If the ripples reach a hungry water strider, it will investigate and taste the morsel before rejecting it.

If you watch them long enough, you will notice how often they mate and realize why entomologists consider water striders the great “lovers” of the insect world!

If you’re lucky, you may see a bright yellow banana slug, a relative of the snail, slithering along the ground in this grove.

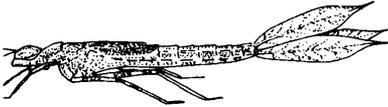


Look upstream at the rock and concrete retaining walls built to prevent bank erosion. High storm flows undercut the soft banks. You will see an innovative approach to bank stabilization at the next stop.

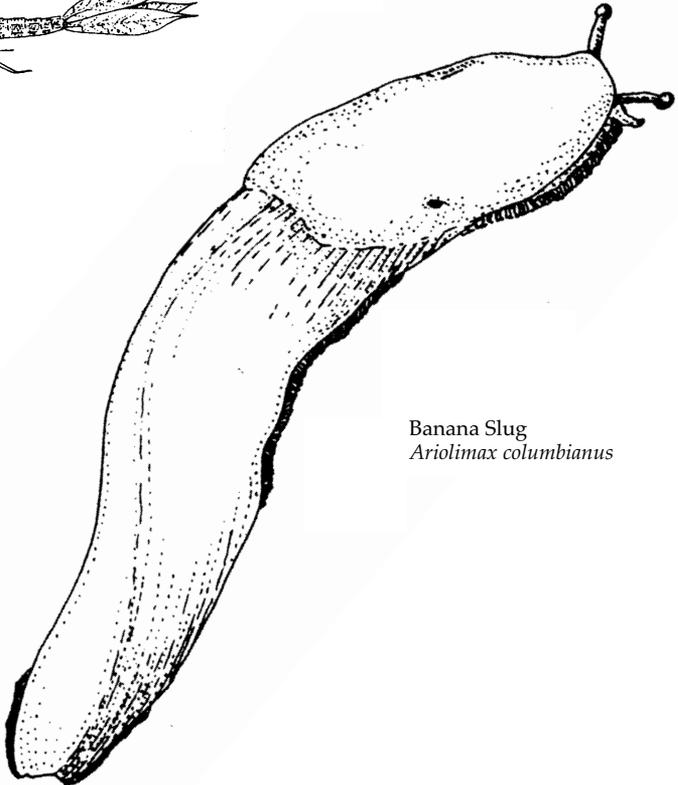
Now walk back up the stairs, turn to the right, and follow the path along the creek downstream. Notice the small shoots at the base of the redwoods around you; this is an example of regeneration by stump-sprouting.



Water Strider
Aquarius remigis



Damselfly
Ishnura gemina



Banana Slug
Ariolimax columbianus

3 REDWOOD CRIBWALL



Turn right onto the wide Stephens Bridge (1931), and look upstream. Hidden beneath lush vegetation are rows of redwood logs built into the south stream bank. This was once the site of a nearly vertical bank that was eroding the lawn and undercutting the bridge supports. The conventional solution to this problem would be to install a concrete retaining wall to stabilize the bank (as you saw just upstream). Instead, a novel alternative—a redwood cribwall—was installed.

This cribwall is one of a number of “biotechnical” bank stabilization techniques that combine vegetation with indigenous materials such as wood or stone. These methods allow plants and structures to function together in an integrated and complementary manner. They are more durable, cost-effective, and environmentally compatible than concrete walls.

The cribwall slopes back into the bank in log cabin fashion. The tie-back logs (perpendicular to the creek) extend 12 to 15 feet into the bank. The spaces between the logs are back-filled with soil to provide strength, weight, and a place for plants to grow. Students planted alders, ceanothus, wild currant, Dutchmen’s pipe vine, ferns, and other native vegetation on the cribwall. Additional plant species have colonized as “volunteers.” By the time the logs rot out (about 50 years), the plant roots will have taken over the structural function of bank stabilization.



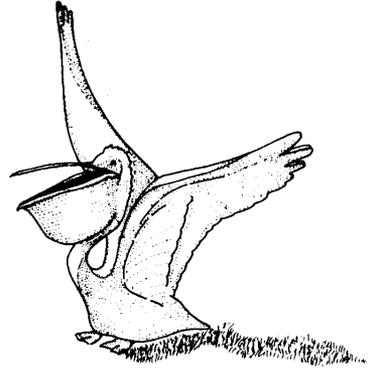
Look down below the bridge and you’ll see a notched redwood log lying on the streambed perpendicular to the water flow. This check dam reduces stream scour during winter storms by breaking up the heavy flow, thereby enhancing pool habitat and creating refugia for fish and aquatic insects.

Continue west down the path past the bronze pelican statue and the old Art Gallery building with its beautiful WPA mosaics. Walk to the end of the parking lot and turn right. Enter the 1935 Student Glade just upstream of Sather Gate; this small amphitheater, surrounded by coastal redwoods, is a great place for lunch.

Looking upstream, you can see that part of the stream is in a concrete bypass structure that allows high winter flows to pass quickly downstream to prevent localized flooding. To the right is a small meander of the original channel that was restored in 1989.

Return to the parking lot and turn right onto Sproul Plaza. Walk past Sather Gate, the original south campus entrance. The plaza is lined with traditionally pollarded plane-trees (sycamore hybrids). This bustling campus hub was the site of the 1960s demonstrations and contains Berkeley landmarks such as Ludwig's Fountain (named after a local dog) and the nearby Free Speech Movement "monument."

4 SATHER GATE



5 FISH POOLS

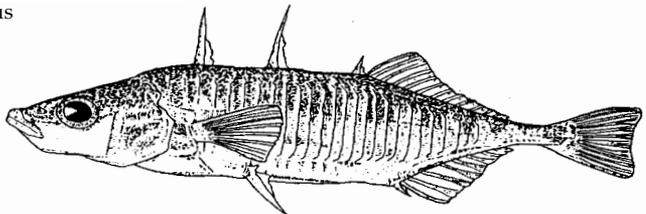
Follow the creek downstream and stop on the first wooden footbridge crossing the stream. By 1989, water quality had improved so much that native fish were reintroduced into Strawberry Creek after a century's absence! Fish disappeared in the late 1800s partly because there was little water in it. (The creek was diverted and used as the campus water supply!) Barriers (check dams and culverts) were installed along the creek. Water quality was degraded by sewage disposal directly into the creek until the early 1900s.

Three-spined sticklebacks were originally stocked but were displaced by two species of native minnows (California roach and hitch), stocked later. These minnows proved to be better adapted to living in the creek. The sticklebacks were flushed downstream and are now abundant at the Berkeley marina near the mouth of Strawberry Creek in the Bay.

You may catch glimpses of the small minnows in this series of deep pools. Find a sunny pool and look down below the water's surface. Minnows usually swim in schools and are often revealed by their shadows on the gravelly stream bottom.

Fish populations depend upon several factors: food supply; water quality and temperature; suitable pool habitat for feeding and

Three-spined Sticklebac
Gasterosteus aculeatus



breeding; and cover from scouring winter flows. So far, the fish have done well. Spawning usually begins in May and continues through the summer. If you look closely around the edges of pools, you may spot the tiny fry. Look for fish in other sunlit pools as you travel downstream from here. Misguided fish lovers periodically dump non-native pet goldfish and mosquito fish into the creek, but they are eventually flushed downstream during winter storms.

Follow the path downstream past the stone bridge and then across the lawn down to the creek. The streambed here is an extensive example of an old stabilization technique known as "hardbed." This aggregate mix of concrete and rocks was poured in the streambed to prevent downcutting of the channel bottom. Hardbed is a poor habitat for aquatic organisms because it offers no refuge from scouring winter flows.

Note the sun-loving green algae growing on the hardbed. This particular species, *Cladophora glomerata*, grows under high nutrient (eutrophic) conditions.



California roach
Hesperoleucus symmetricus

Actual Size



Hitch
Lavinia exilicauda

6 BAY TREE BRIDGE

Continue down the path until you reach the Bay Tree Bridge. Pause for a moment to relax and listen to the melodies of the stream. Look upstream and imagine the changing seasons from rainy winters to dry summers in our mediterranean climate. Picture the raging creek scouring the banks in the midst of a winter storm, or the flow dwindled to a trickle during a severe drought.

What is it about the sound of water that many people find so soothing? The Greek philosopher Heraclitus said, "You cannot step twice into the same river." What literal and figurative images does this raise in your mind?

Bricks commonly found in the streambed and banks downstream of this bridge were once part of student cottages that lined the south side of the creek over a century ago.

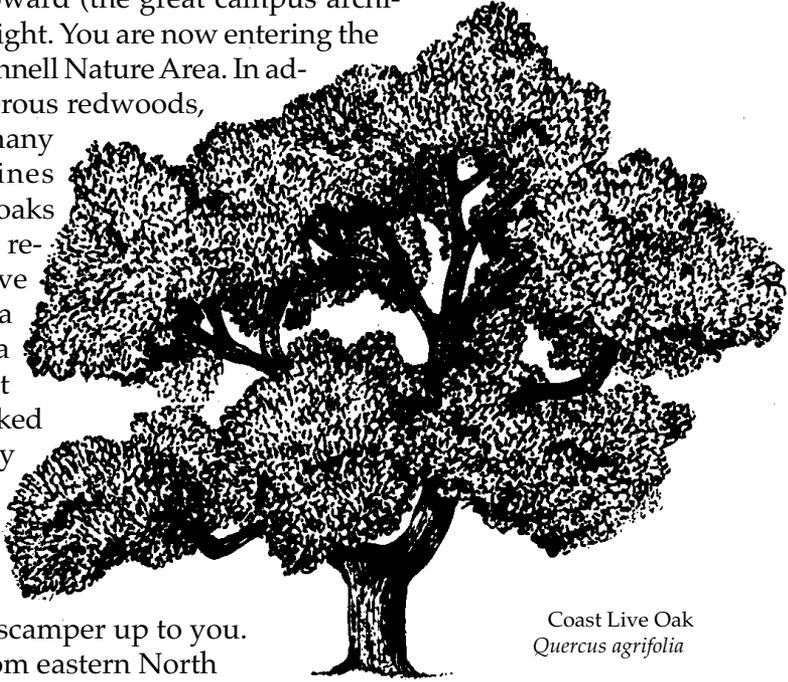


Leave the Bay Tree Bridge, cross the roadway, and follow the flagstone path past the football statue. Cross the bridge designed by John Galen Howard (the great campus architect) and bear right. You are now entering the heart of the Grinnell Nature Area. In addition to numerous redwoods, you will find many Monterey pines and coast live oaks here. This area resembles a native oak savanna and provides a glimpse of what the campus looked like a century ago.

Hungry fox squirrels, often fed by students, may scamper up to you. This import from eastern North America filled an empty niche in the urban San Francisco Bay area because the native gray squirrel never adapted to urban conditions.

Continue down what was called “lover’s lane” and cross the wooden footbridge over the main branch of Strawberry Creek. You are now about 250 feet upstream of the entrance to the city culvert, the point where the stream leaves the campus. Under the redwood trees to the left is a plaque marking the site where the 1772 Spanish expedition stopped and described the beauty of the dry grassy headlands later named the Golden Gate. The tall buildings of downtown Berkeley now obscure the view.

7 GRINNELL NATURE AREA



Coast Live Oak
Quercus agrifolia

8 EUCALYPTUS GROVE

Retrace your steps up the path, turn left on the bicycle path, and cross the wooden footbridge into the Eucalyptus Grove. In 1882, this grove of Tasmanian blue gums (*Eucalyptus globulus*) was planted as a windbreak for the old cinder running track. It is the tallest stand of hardwood trees in North America and the tallest stand of this type of eucalyptus in the world.

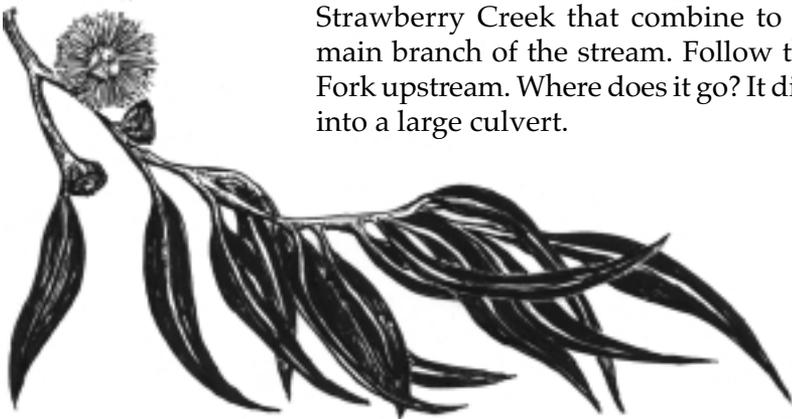
Why is there a lack of undergrowth in the grove? Do eucalyptus take up the soil water that other plants need? Does the canopy create shady conditions too dark for other plants? Is it because they have compounds in their leaves that prevent other plants from growing (allelopathy)? Or is it from people trampling the undergrowth?

Eucalyptus were introduced to California; they have few natural herbivores, such as the koala bear, here. As a result, they look much healthier than in their native Australia.

Notice how the eucalyptus trees shed their shaggy bark. By regularly doing this, the trees also shed bark-burrowing insects that cause disease.

Wander through the grove and find the confluence of the South and North Forks of Strawberry Creek that combine to form the main branch of the stream. Follow the North Fork upstream. Where does it go? It disappears into a large culvert.

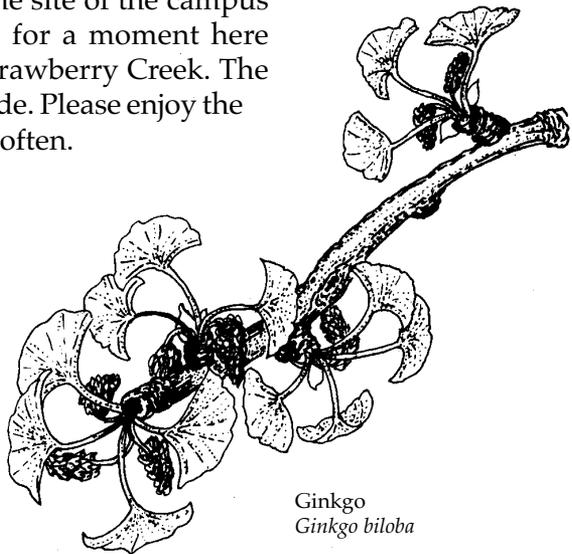
Eucalyptus
Eucalyptus globulus



9
NORTH FORK

To find the creek again, head straight toward the hills as if the stream were still open and leave the Eucalyptus Grove. Look for riparian (streamside) vegetation on the other side of the traffic circle that has the large eucalyptus in the center. Follow the stream along the south (left) bank noting the beautiful vegetation including horsetails, bay trees, and many types of exotic plants. People have been waiting for the eucalyptus tree leaning over the walkway to fall for the last 40 years.

Cross the footbridge toward Giannini Hall and admire the Beaux-Arts style of Wellman Hall with the olive trees in front. Go past Giannini Hall, and you'll enter the Wickson Nature Area, the last of the three campus nature areas. Be sure to see the ginkgo tree between Giannini Hall and the creek. Planted in 1881, it is one of the most treasured trees on the campus, and it is especially exquisite with its yellow autumn foliage. One of the reasons that this area contains so many beautiful trees is that it was originally the site of the campus Botanical Garden. Relax for a moment here among the trees along Strawberry Creek. The tour ends in this quiet glade. Please enjoy the creek, and return to visit often.



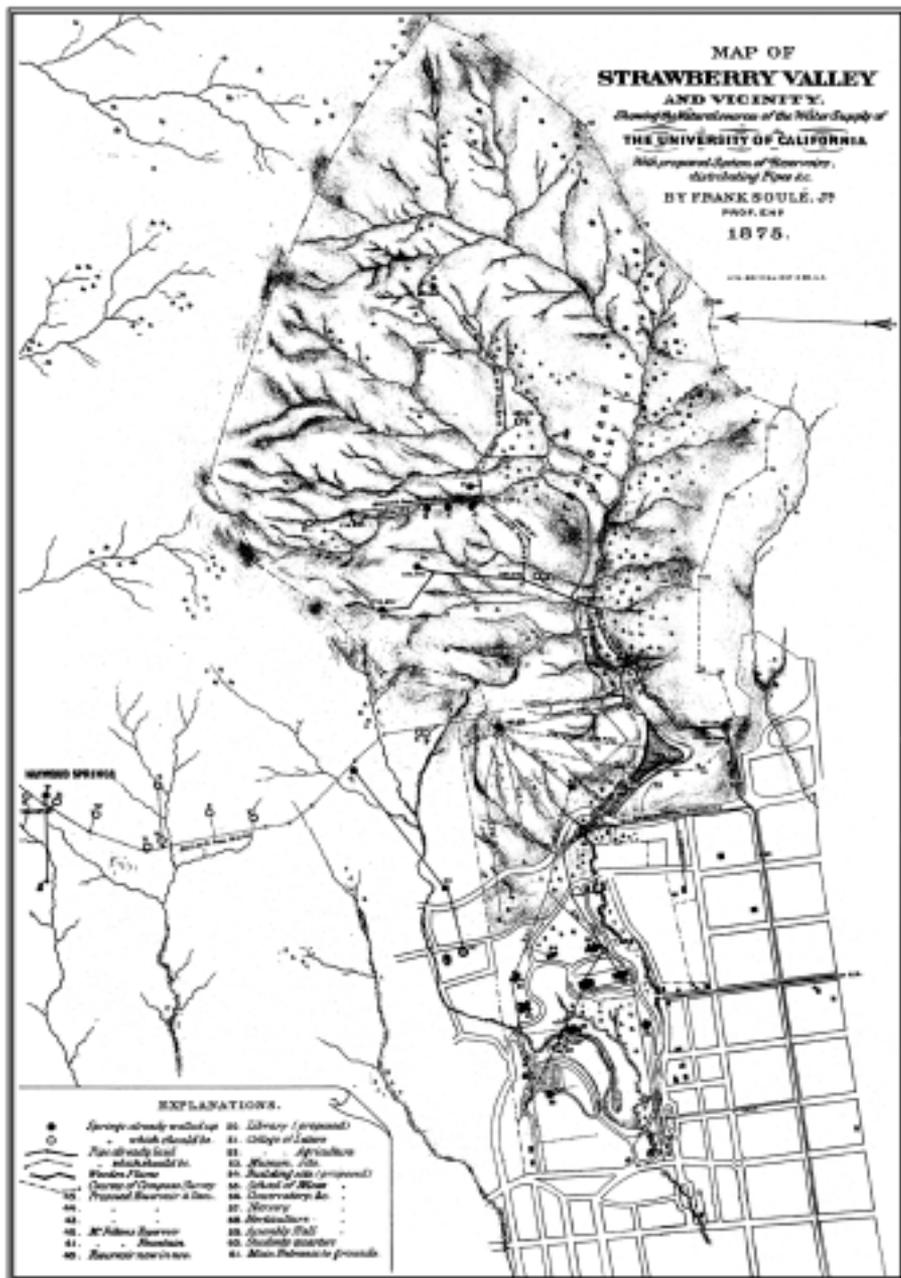
Ginkgo
Ginkgo biloba

10 BOTANICAL GARDEN

You can see the headwaters of Strawberry Creek by visiting the UC Botanical Garden in Strawberry Canyon above Memorial Stadium. The creek runs through the heart of the 34-acre garden, surrounded by an impressive collection of more than 13,000 types of plants. The upper portion of the creek is landscaped with rhododendrons from China, Nepal, and Bhutan and includes the serene Japanese Pool. Dawn redwoods, Chinese peonies, and other Asian plants thrive in the moist microclimate along the stream.

The creek also flows through the California native section past oaks, bays, and buckeye trees. This area has been restored to represent the native flora along central California coast range creeks. A wooden walkway brings you close to many of the plants and down to a small pool and waterfall. Above the creek on the hillside is a deck with interpretive displays that overlooks the Strawberry Canyon watershed. The garden offers a quiet setting for spending time by the creek. Shuttle buses run from Hearst Mining Circle to the garden at quarter-past and quarter-before the hour on weekdays. The garden is open every day from 9 a.m. to 4:45 p.m. From Memorial Day to Labor Day, the garden is open until 7 p.m.

A collection of studies on Strawberry Creek is maintained in the Water Resources Center Archives on the 4th floor of O'Brien Hall.



This 1875 map of the Strawberry Creek watershed shows the original waterworks that supplied the campus. Note the middle fork of the creek on the central campus below North and South Halls, which was filled in 1882.

THOUGHTS TO TAKE AWAY FROM THE TOUR

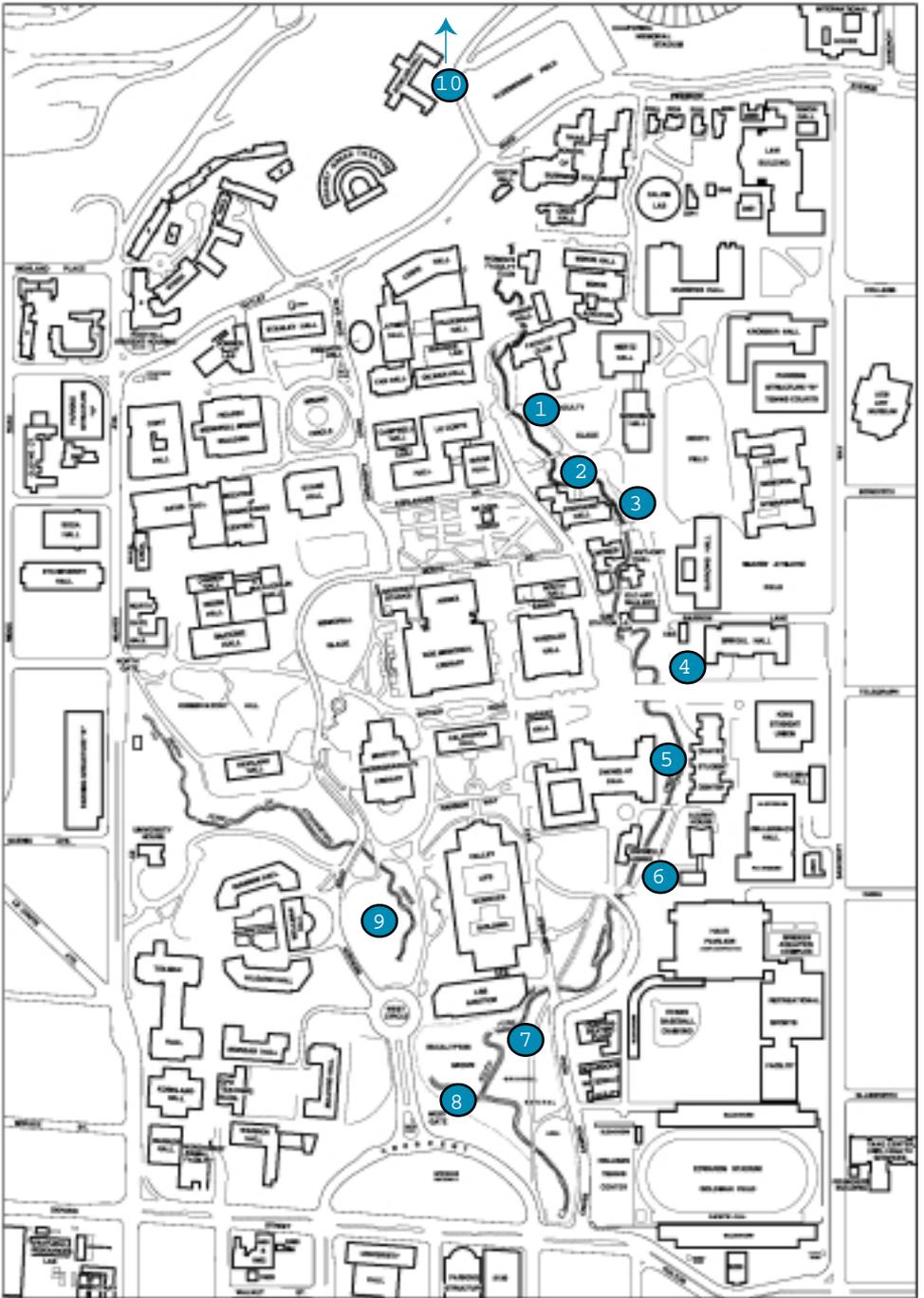


THINK ABOUT HOW STRAWBERRY CREEK fits into the campus environment. Try to imagine what the creek looked like a century ago when salmon still spawned in it, or even earlier when native peoples used the creek or the Spanish explorers looked out at the beautiful vistas of the yet unbridged Golden Gate. Do you think it would be a good idea to try to rehabilitate other urban creeks?

Strawberry Creek is an irreplaceable natural resource for both the university and the Berkeley community. The benefits of preserving and enhancing the creek and its surrounding areas are far-reaching. The creek is the major focus of campus open space and therefore establishes both the form and character of its landscape. The natural areas along Strawberry Creek offer pleasing contrast to the urban hardscape, acting as a buffer zone that provides visual amenity and variety.

Preservation of the creek corridor is essential if the unique qualities of the campus landscape are to be sustained. This requires community cooperation as well, because the waters that flow through campus are affected by what happens upstream. For many alumni, Strawberry Creek provides some of their most memorable recollections of the Berkeley campus. As long as Strawberry Creek remains healthy, it can be a source of inspiration and joy for those who study, work, or live within its watershed.

You may see this symbol around Berkeley, representing the underground course of Strawberry Creek. Quails, water striders, turtles, and other symbols represent different Berkeley creeks.





Related Campus Attractions

Valley Life Sciences Building

Paleontology Museum and fossil displays
University Herbarium

Mulford Hall

Forestry exhibits and wood specimens

Wellman Hall

Entomology exhibits

Hearst Mining Building

Mineral displays

McCone Hall

Fossil and earthquake exhibits
Map Room

Kroeber Hall

Anthropology Museum

Lawrence Hall of Science

Public science center and museum

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