Sacramento’s native oak trees are the true monarchs of the forest. With a life span of up to 400 years, they can reach 100 feet tall and have a canopy 100 feet wide. The branches and leaves are often ornamented with interesting galls. Their picturesque trunks and gnarled branches inspire awe and imagination. These majestic oak trees are important islands of life for thousands of insects, birds, and animals. Acorns provide nourishment for all types of wildlife – and even some hard working humans. This is Sacramento County’s natural heritage– the native oak!
There are 20 species of oak trees native to California with three native oak species dominating Sacramento County landscapes – the valley oak, interior live oak, and blue oak.

Valley oak (*Quercus lobata*) is the monarch of all California oaks because of its great size and beauty. The valley oak may be the largest oak tree in North America, reaching 100 feet tall and equally as wide. Mature trees typically live 150-250 years and support a rounded crown with drooping branches sometimes touching the ground. In areas where they grow more slowly, they may live up to 400 years or more.

Valley oaks grow best in valley areas near perennial creeks and rivers. Here their deep roots thrive in rich alluvial soils and have permanent access to ground water. These areas are also prime farmland and were consequently cleared of the extensive oak woodlands and riparian forest that dominated California’s central valley prior to the 20th century.

Valley oaks are deciduous with large, deeply lobed leaves from which the scientific name *Quercus lobata* was derived. In winter their bare branches form black lace-work against the cold sky. One conspicuous valley oak feature is the round, hard, ball shaped galls that hang from their branches. Often called ‘oak apples,’ these galls are created by the tree in response to a small wasp laying its eggs.

Interior live oak (*Quercus wislizenii*) is an adaptable tree that grows in many soils and conditions. It was the dominant tree growing along rivers flowing from the Sierra to the Central Valley before many of the rivers were dammed and the land cleared.
It is evergreen and can be identified by its leaves, which are often prickly along the margins. These trees usually have a multi-trunk form where they have re-sprouted from the base and are often wider than they are tall. The trunk is another good way to identify this tree because it has smooth gray bark that looks similar to the leg of an elephant! Interior live oaks are often confused with the coast live oak, whose leaves are generally more cupped.

**Blue oak (Quercus douglasii)** has the amazing ability to grow on dry hillsides through the heat of summer. This allows the blue oak to range through 39 counties in California! This tree grows throughout Sacramento in the higher and drier locations that valley oaks can seldom endure.

One adaptation that allows them to withstand summer drought is a waxy blue layer on the leaves to prevent water loss. If conditions become dry enough, they may even drop their leaves in the summer and become dormant. The blue oak leaves are great for discovering small galls that look like saucers, urchins, and stars.

**Other Oaks**

In addition to the three species of oak native to Sacramento, there is a native oak hybrid named oracle oak. It is a cross between the California black oak of the foothills and the interior live oak. Many oaks from the Eastern US and around the world such as cork, red, scarlet, and pin oak are common in landscaped areas around Sacramento. Sacramento is a great place for oak trees!
Oak History

Oaks covered much of Sacramento County before the Gold Rush of 1849. Valley oak riparian forests grew in vast stands along the flood prone rivers and streams. Interior live and blue oaks populated many of the hills and savannas of Citrus Heights, Fair Oaks, and Folsom. Imagine traveling with a member of an 1854 railroad survey near Cache Creek who wrote “The timber belt is composed of the most magnificent oaks I have ever seen. They are not crowded as in our forests, but grow scattered about in groups or singly, with open grass-covered glades between them… There is not undergrowth beneath them, and as far as the eye can reach, when standing among them, an unending series of great trunks is seen rising from the lawn-like surface,” (Plavic, et al). Can you picture it?

Unfortunately, only a small portion of the majestic oak forest remains. Most of the land used today for agriculture, ranching, and urban uses has been cleared of native oak trees at some point in the last 150 years. Our best estimates are that less than 10% of the riparian valley oak forests remain as isolated fragments of what existed in 1850. Less than one percent of the valley oak woodlands that existed prior to 1850 have been preserved.

The interior live oaks that once grew along the rivers in the foothills were impacted by mining, dam construction, and agricultural conversion. Increasing suburban growth around Sacramento in the valley and foothill areas has removed large areas of interior live and blue oaks.
Oaks and Native Americans

The main tribe located in and around the Sacramento area, the Maidu Indian People, valued oak trees for a diet staple – the acorn. Some oaks produced 200-300 pounds of acorns on a single tree and the average adult ate 2,000 pounds of acorns a year! Acorns were harvested and used to make soup, bread, cakes, flour, and more. The whole village would gather the acorns in the fall. The acorns would first be dried in the sun then stored in baskets and granaries. The nuts were ground into meal on grinding rocks (many examples of these rocks still exist in the area). After grinding, the meal was sifted and then leached by pouring water over it several times to remove the tannin, which made the meal bitter. The finished meal would then be used to make cereal and bread. Some meal was rolled into hard balls for food on a journey. The Maidu Indian People would celebrate the acorn harvest with a tribal gathering every year. This gathering was called Big Time and is still celebrated today at several locations in the valley.

Oaks and Wildlife

Native trees are critical to wildlife both large and small. Hundreds of vertebrates and thousands of insects are associated with the oak woodlands of California. Animals as large as the grizzly bear eat a great amount of acorns. A single mule deer can eat up to 300 acorns a day! Tiny insects eat the acorns, leaves, and branches as a primary food source. Some animals depend on oaks to keep them safe from predators, while others use the trees as a home. Animals such as scrub jays help disperse the seeds.
Regulations

Because of their great value to Sacramento’s natural and cultural history, native trees are protected in Sacramento County and cannot be pruned or removed without a permit. Any oak tree with a trunk that measures at least 6 inches in diameter at breast height (4’6” above the ground) is protected. Other native tree species are also protected: black walnut, sycamore, cottonwood, Oregon ash, boxelder, and willow.

Protecting Oak Trees

The key to protecting native trees is to not disturb the root zone. The root zone varies with soil type and drainage, tree species, and age of the tree. Commonly it is 1 1/2-2 times as wide as the dripline or even greater.

<table>
<thead>
<tr>
<th>Construction activities</th>
<th>Potential damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Grading</td>
<td>• Severed roots</td>
</tr>
<tr>
<td>• Paving</td>
<td>• Compacted soil</td>
</tr>
<tr>
<td>• Trenching</td>
<td>• Roots buried under fill</td>
</tr>
<tr>
<td>• Filling</td>
<td>• Different drainage and runoff patterns</td>
</tr>
<tr>
<td>• Driving heavy equipment</td>
<td></td>
</tr>
</tbody>
</table>

During construction, make sure the root zone is fenced off to prevent damage to trees. Also be aware of how construction activities outside the root zone may affect the tree by changing water drainage and runoff patterns.

For more details on preventing damage to mature oaks during construction, an excellent publication Living Among the Oaks: A Management Guide for Landowners is available from the Integrated Hardwood Rangeland Management Program at http://danr.ucop.edu/ihrmp/allpubs.html#living

Development projects in Sacramento County are required to preserve landmark native trees by designing the project around them and by including their majestic form in the character of the development.
Caring For Native Oak Trees

For mature oak trees, a “hands off” policy is the best general guideline. The vast majority of tree roots are in the top 18 inches of soil and are easily damaged.

<table>
<thead>
<tr>
<th>Rules of thumb for mature oak tree care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water deeply and infrequently only in drought years</td>
</tr>
<tr>
<td>• Do not disturb the soil of the root zone or mound soil against the trunk.</td>
</tr>
<tr>
<td>• Avoid trenching, compacting, adding or removing soil in the root zone</td>
</tr>
<tr>
<td>• Do not cover root zone with asphalt or concrete</td>
</tr>
<tr>
<td>• Avoid changing the watering and drainage patterns</td>
</tr>
<tr>
<td>• Allow the leaf litter from the tree to create natural mulch</td>
</tr>
</tbody>
</table>

**Watering** frequently in the dry months is a common cause of mature tree decline and death. Lawns and sprinklers are incompatible with established native oak trees. Allowing the soil to dry out prevents fungal disease from attacking and eventually killing the tree. However, in drought years it can be beneficial to deep water native oaks once or twice in rainless months if the drought is severe. To deep water, soak the outer two thirds of the root zone to a depth of at least 12 inches, moving slowly about the tree. The water penetration may take many hours if the soil is compacted or has high clay content. Never water more than once a month and keep water at least 10 feet from the trunk of the tree.

**Fertilization** does not benefit mature trees unless indicated by a specific soil deficiency. Consult a certified arborist to perform a soil test if you are concerned.

**Pruning** is generally not necessary except to remove dead or diseased branches. Obtain a tree permit from your local jurisdiction before pruning and select an ISA certified arborist to professionally prune your tree. For tips about selecting a professional arborist, visit our website at www.sactree.com.

**Mulching** with organic material like wood chips can reduce weed growth and insulate the important feeder roots. Allow natural litter to fall from the tree and mulch the surface, but do not place it against the trunk. Do not use rock as it compacts the soil and absorbs heat. Also avoid redwood and cedar mulches which are slow to decompose.
Landscaping Near Oaks

It is best not to disturb the root zone of mature oaks with plantings or other materials. Instead, retain the natural leaf mulch from the tree. This will insulate important feeder roots, recycle nutrients into the soil, hold moisture longer, and save yourself the work of raking!

Do not plant anything within 10 feet of the trunk, as this will help prevent disease.

Drought tolerant and native species that tolerate partial shade and dry summers can be planted outside of the dripline. Wildflower mixes can be used for a splash of color, and native grasses will also add texture and interest to the area around the tree. Some suggestions for plantings in this area are in the table below.

This is a small sampling of drought tolerant native plants that may be planted outside an oak’s dripline. Many other species can also be found at native plant nurseries and California Native Plant Society plant sales.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosa californica</td>
<td>California wild rose</td>
</tr>
<tr>
<td>Ceonothus sp.</td>
<td>Wild lilacs</td>
</tr>
<tr>
<td>Baccharis pilularis</td>
<td>Coyote bush</td>
</tr>
<tr>
<td>Lupinus albifrons</td>
<td>Bush lupine</td>
</tr>
<tr>
<td>Rhamnus californica</td>
<td>Coffeeberry</td>
</tr>
<tr>
<td>Cercis occidentalis</td>
<td>Western redbud</td>
</tr>
<tr>
<td>Muhlenbergia rigens</td>
<td>Deergrass</td>
</tr>
<tr>
<td>Epilobium californica</td>
<td>California fuschia</td>
</tr>
<tr>
<td>Fremontodendron californicum</td>
<td>Flannelbush</td>
</tr>
</tbody>
</table>
Growing New Oaks

Because native oaks are adapted to Sacramento, they can be a low maintenance addition to a landscape that endures for generations. Young oak trees can be easily established from acorns or seedlings if they are protected from rodents and given monthly watering in the dry months. Many people find oak seedlings coming up in their yards that were deposited there by scrub jays or squirrels! Most local nurseries also carry container stock of our native oak trees that can be planted for a quick start. Native oaks that start their lives in lawns or irrigated conditions will grow quickly but eventually succumb to fungal diseases unless summer watering is greatly reduced and kept away from the trunk.

Oak Regeneration

Large native oaks are common in Sacramento, but you may have noticed that there aren’t enough small oak saplings to take the place of the aging giant oaks in the natural cycle. Oak trees throughout California are threatened not only by human impact, but by failure to maintain population numbers through natural regeneration. Valley oak and blue oak in particular have not established enough new trees in the last 100 years. Scientists are studying this problem and have proposed several reasons for the failure of oaks to regenerate. Since the arrival of the Spaniards in the 1700s, annual weedy grasses have taken over the open savannahs and woodlands. These weeds create dense mats of undergrowth that dry out the soil and compete with oak seedlings for water. Fire suppression and changes in the fire cycle, which used to clear this undergrowth from the woodlands, may now limit the chances of a seedling growing without competition. Since most of the extensive oak woodlands are on ranch land, grazing impacts oak regeneration as livestock and wild animals browse young trees and prevent them from transitioning to saplings. Other possible causes may include increased rodent populations and global climate change.

Landowners can help seedlings become established by removing competing weeds from around new seedlings, protecting them with tree tubes, and fencing out livestock long enough for the seedlings to grow above the browse line.
Native Tree Mitigation

Replacement trees must be planted when the County approves native trees to be removed by a development project. This mitigation is meant to replace the habitat and environmental values of the native trees that are removed.

When possible, the mitigation trees should be planted within the development so that there is no long term loss of native trees on the site. When replanting on the site is not feasible, the trees are replanted at another location that is appropriate for them to grow and provide habitat.

The Sacramento Tree Foundation offers a program called Native Trees in Urban and Rural Environments (NATURE) which replants trees in public places where they will be protected and help restore the native landscapes of Sacramento County. You can help plant trees with NATURE or teach school children to grow acorns into seedlings as a volunteer docent. Contact the Sacramento Tree Foundation to sign up!
Sacramento contains some great places to see native woodlands. Here are a few that you can take advantage of and appreciate our natural heritage.

**American River Parkway**
http://www.sacparks.net/our-parks/american-river-parkway

Effie Yeaw Nature Center in Ancil Hoffman Park contains nature trails and excellent examples of riparian and oak woodlands.
http://www.effieyeaw.org

Ambassador Park is in the midst of a large grove west of Sunrise Boulevard and east of Elmanto.

Goethe Park in Rancho Cordova has a nature area with many interior live oak specimens.

Discovery Park near Garden Highway and Interstate 5 has many native sycamore and cottonwood.

**Folsom Lake State Recreation Area**

Take the Middle Ridge or Shady trails from the Nimbus Dam overlook to enjoy blue and interior live oaks.
http://www.parks.ca.gov/?page_id=500

**Deer Creek Hills**
http://www.sacramentovalleyconservancy.org/

Sacramento Valley Conservancy leads regular hikes and horseback rides through the blue and interior live oak woodlands of eastern Sacramento County.

**Cosumnes River Preserve**
http://www.cosumnes.org/

The preserve has several trails which pass through riparian areas, valley oak woodland, and restoration plantings.

**Stone Lakes National Wildlife Refuge**
http://www.stonelakes.org/

Stone Lakes is open for hiking and bird watching in their riparian areas on alternating Saturdays.

**Other fine locations include:**

Sacramento - Natomas Oaks Park off Garden Hwy., Land Park near Fairytale Town, Del Paso Park

Citrus Heights – Rusch Community Park

Rio Linda – Dry Creek Parkway

Orangevale – Orangevale Park, Snipes Pershing Ravine

Fair Oaks – Fair Oaks Park, Fair Oaks Bluff, Phoenix Park

Elk Grove – Elk Grove Regional Park, Miwok Park
References


Resources

California Oak Foundation
A nonprofit organization dedicated to preserving the oak forest ecosystem and its rural landscapes.
http://www.californiaoaks.org/

University of California Integrated Hardwood Rangeland Management Program
Conducts research and outreach to assure the sustainability of oak woodlands.
http://danr.ucop.edu/ihrmp/

California Oak Mortality Taskforce
Tracks the most recent findings of Sudden Oak Death
http://www.cnr.berkeley.edu/comtf/index.html

California Native Plant Society
Information on oaks and other native plants suitable for landscapes
http://www.cnps.org/

Sacramento County Tree Coordinator
Contact regarding tree permits and questions about oak trees in Sacramento County
(916) 874-5278

City of Sacramento Urban Forest Services
Contact regarding trees in Sacramento city limits
(916) 808-6345
http://www.cityofsacramento.org/parksandrecreation/urbanforest/
Trees

- Clean and cool the air
- Produce oxygen
- Shade our homes, streets, parks, and more
- Save energy
- Add beauty
- Increase property values
- Hold stormwater
- Prevent erosion
- Help us feel comfortable
- Provide food for humans and wildlife
- Provide homes and shelter for wildlife
- Produce useful wood products
- Reduce greenhouse gases

Help build the best urban forest!