



INSTITUTE FOR SUSTAINABILITY REPORT #6

Walking Guide to the Campus Trees

January 2015



A university campus devoid of trees would be unimaginable. Trees provide us with so much aesthetic beauty, a shady respite to take a break from the stresses of life, coupled with fragrant aromas in the air. In addition, they are responsible for numerous ecological benefits, such as providing oxygen, filtering the air and the soil of pollutants, providing food and shelter for countless animals, insects and birds, reducing storm-water run-off and soil erosion, and sequestering carbon dioxide. The trees you will experience on the campus of California State University, Northridge are primarily ornamental and not native to this region. They are however, representative of trees commonly found in the California urban landscape and their presence on campus provides us an opportunity to explore a diversity of species in close proximity. This publication is designed to lead the interested explorer on a series of short guided walks through the campus discovering the abundance of trees it has to offer.

Prior to the 19th century a diverse ecosystem structure of native flora in the Mediterranean biome existed in the San Fernando Valley. The vegetation included valley forests, open woodlands, low growing shrubs and grassland. Local, native plant species are well adapted to the hot summer temperatures and many months of little rainfall characteristic of Mediterranean ecosystems (Schiffman, 2005). Separated from marine weather patterns by the coastal ranges, the San Fernando Valley experiences a desert-like climate with high temperatures averaging 93°F in the warmest summer months and 55°F in winter. Although a rainy season in January and February can bring heavy precipitation over several days, drought is a prevalent climatic condition and average annual rainfall amounts to a mere 16 inches.

By the mid-late 19th century native trees had been largely eliminated to make room for ranches, crops and orchards. Agriculture in the valley grew even further in the early part of the 20th century with the assistance of water delivered by Mulholland's Los Angeles Aqueduct, and fruit, especially citrus cultivation became San Fernando's biggest industry. Related industries such as fruit preservation and canning grew, but like most other communities in the region agriculture gave way to urban and suburban development following the Second World War and the price of land rose. In 1958, citrus and avocado orchards were cleared and the campus of San Fernando Valley State College (now California State University, Northridge) was developed.

Today CSUN has over 4000 trees of roughly 200 different species. In 1989 Robert Gohstand, a professor in the Geography Department, worked with students in the department to produce a plant atlas, identifying and mapping campus trees and shrubs. Following the 1994 Northridge earthquake, this inventory was in need of an update and in 2010, Professor and Director of the Institute for Sustainability, Dr. Helen Cox and her students took on this task creating a CSUN Tree Atlas (Cox, 2011). The atlas identifies and maps tree species and examines their carbon sequestration ability, the capture and long-term storage of excess atmospheric carbon dioxide. Following on from this prior work, the purpose of the work presented here is to design walking routes around campus to engage the participant in learning about and appreciating the diversity of the tree community and its characteristics.



During the spring of 2014, graduate students from a biogeography seminar in the Geography Department working under the guidance of Dr. Mario Giraldo, carried out research and produced a preliminary manuscript documenting the characteristics of campus trees. This provided the kernel for this self-guided tour. The final manuscript includes 74 different tree species organized into four different walking routes that will lead the user on an educational discovery tour. For each tree species encountered enroute we provide a photographic inventory, the taxonomic description, country of origin, habitat distribution, water requirements, and ecological importance. Trees identification and characterization were done using the “CSUN Tree Atlas” (Cox, 2011), reference books, and a variety of websites, both governmentally and privately maintained. Detailed taxonomic classifications were retrieved primarily from the United States Department of Agriculture’s Natural Resources Conservation Service Plant Database. Other databases, such as that of the California Invasive Plant Council, were accessed to identify possible threats that tree species might pose to native vegetation. Our goal is to give the user of this guide an opportunity to consider CSUN as a living lab. where learning can happen outside the classroom, and to provide useful information to the campus community and visitors about the trees that make our campus beautiful.

Acknowledgments

We would like to acknowledge the contributions of the graduate students in the Spring 2014 Biogeography seminar, David Bailey, Forrest Brown, Brittany Clifton, Sabrina Esquivel, Olga Govdyak, Claudia Hasenhüttl, Joseph Lamon, Armen Margousian, Nathaniel Mendoza, Madison Most, Matthew Nordstrom, Amanda Osborn, Mark Prindle, Karen Sonksen, Nicole Tavares, and Joshua Van Buskirk, whose work inspired this volume. Thanks to Provost Harry Hellenbrand and Diane Stephens for their support of the Institute for Sustainability and the tree mapping project, and to the Facilities management and Green Core teams who have provided guidance and encouragement throughout.

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Campus Map

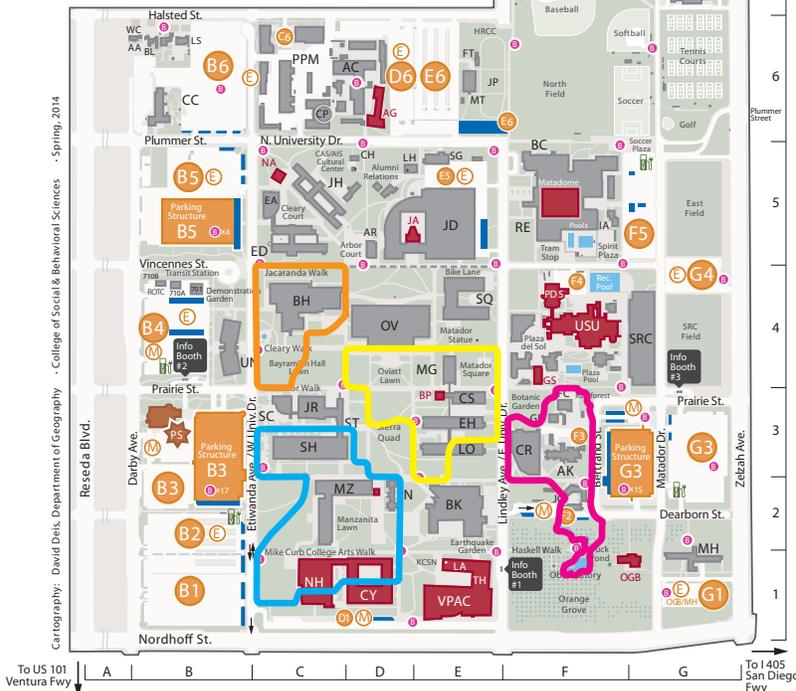
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- LEGEND**
- Parking
 - Event Sites
 - Police Services
 - Metered/Pay-By-Space
 - Employee Only
 - P Parking
 - E Emergency Blue Light Phone
 - E Electric Vehicle Charging Station

- Walk 1
- Walk 2
- Walk 3
- Walk 4



Cartography: David Deis, Department of Geography - College of Social & Behavioral Sciences - Spring, 2014

- Building Name— Grid Location
- AK Addie Klotz Student Health Center— F3
 - AA Asian American Studies House— B6
 - AC Art and Design Center— D6
MFA Studios [AC]—D6
 - AG Art Gallery —D6
 - AR Armer Screening Room[MZ100] —D2
 - AR Arbor Grill— D5
 - BC The Abbott and Linda Brown Western Center for Adaptive Aquatic Therapy— F5
 - BH Baseball Field— F7
 - BH Bayramian Hall— C4
 - BK Matador Bookstore Complex— E2
 - BL Black House— B6
 - BP Donald Bianchi Planetarium —E3
 - CC Campus Theatre[NH100] —C1
 - CC Children's Center— B6
 - CH Chicano House— D5
 - CP Central Plant— C6
 - CPS Community Policing Substation —G7
 - CR Chaparral Hall— F3
 - CS Citrus Hall— E3
 - CY Cypress Hall— D1
 - EA Education Administration— C5
 - ED Education— C5
 - EH East Field— G5
 - EH Eucalyptus Hall— E3
 - FC Fuel Cell— F3
 - FT Fitness Center/Nautilus— E6
 - GR Golf— G6
 - GR Greenhouse— F3
 - GS Grand Salon —F4
 - IA High Ropes Challenge Course (HRCC)— E6
 - IA Intercollegiate Athletics Office— F5
 - JA C.R. Johnson Auditorium —D5
 - JC Jeanne Chisholm Hall/NCOD— F2
 - JD Jacaranda Hall— E5
 - JH Juniper Hall— C5
 - JP Jogging Path—E6
 - JR Jerome Richfield Hall— C3
 - KCSN— E1
 - LA Kurland Lecture Hall —E1
 - LH Laurel Hall, Alumni Relations— D5
 - LO Live Oak Hall— E3
 - LS Child and Family Studies Lab School— B6
 - MG Little Theatre[NH121] —C1
 - MG Magnolia Hall— E4
 - MH Matadome[RE140] —F5
 - MH Monterey Hall— G1
 - MT Matador Hall— E6
 - MZ Manzanita Hall— D2
 - NA Armer Screening Room [MZ100]
 - NA Charles H. Noski Auditorium —C5
 - NH North Field— F6
 - NH Nordhoff Hall— C1
 - Little Theatre [NH121]
 - Campus Theatre [NH100]
 - OGB Orange Grove Bistro —F1
 - OV Delmar T. Oviatt Library— D4
 - PDS Plaza del Sol Performance Hall —F4
 - PPM Physical Plant Mgmt./Corp. Yard— C6
 - PS Police Services —B3
 - Rainforest— F3
 - RE Redwood Hall— F5
 - Matadome[RE140]—F5
 - Pools— F5
 - Racquetball Courts— F5
 - Recital Hall[CY158] —D1
 - Softball Field— F6
 - SC Sierra Center— C3
 - SG Sagebrush Hall— E5
 - SH Sierra Hall— C3
 - Whitsett Room [SH451]
 - SN Santa Susana Hall— D2
 - Soccer Practice Field— F7
 - Soccer Plaza & Field— G6
 - SQ Sequoia Hall— E4
 - SRC Student Recreation Center— G4
 - SSU Satellite Student Union— G9
 - ST Sierra Tower— C3
 - Track— F8
 - Transit Station— B4
 - TH Experimental Theatre —E1
 - Tennis Courts— G6
 - UN University Hall— B4
 - UP University Park Apartments— F-G, 8-9
 - USU University Student Union —F4
 - UV University Village Apartments— G11
 - VPAC Valley Performing Arts Center —E1
 - Whitsett Room[SH451] —C3
 - WC Women's Center— B6





Glossary of Terms

- Acuminate** Tapering to a narrow point
- Acute** Angled sharply to a point
- Alternate** Leaves arranged singly and on both sides of a stem
- Anemochore** Plant with seeds or spores adapted for dispersal by wind
- Aril** Fleshy outer covering of a seed
- Axil** Upper angle formed between a leaf and a twig, or a twig and a shoot, or the junction between two veins
- Bipinnate** A pinnate leaf whose leaflets are themselves pinnate
- Bole** Trunk or stem of a tree
- Catkin** Dense, usually long and pendant group of flowers
- Ciliate** Hairy fringe on margins
- Compound** Leaves comprised of several separate leaflets
- Cordate** Heart-shaped
- Crenate** Blunt, rounded teeth
- Deciduous** Falling at the end of a growth period
- Dioecious** Having male and female flowers on separate trees
- Drupe** Fruit containing a single seed in the form of a stone
- Glabrous** Smooth, not hairy
- Hermaphrodite** Organism with both male and female reproductive organs, having both carpels and stamens
- Inflorescence** Floral part of a plant
- Lanceolate** Shaped like the blades of a spear
- Lobe** Rounded section of a leaf, divided by sinuses
- Margin** Leaf edge
- Monoecious** Both male and female flowers grow on the same tree
- Ovate** Egg-shaped leaf, widest below the middle
- Palmate** Leaf that has lobes or leaflets radiating from one simple point, like the fingers of a hand
- Panicle** Compound inflorescence whose flowers branch from a central stem
- Pedicel** Stem that attaches single flowers to the main stem of the inflorescence
- Peduncle** Flower stalk
- Petiole** Leaf stalk
- Pinnate** Compound leaf with leaflets arranged regularly each side of a rachis
- Pubescence** Covering of soft, short hairs
- Raceme** inflorescence of stalked flowers growing from a rachis
- Rachis** Central stalk of a compound leaf or inflorescence
- Riparian** The interface between land and a river or stream
- Samara** Dry fruit where seed is surrounded by a papery winglike structure for wind-dispersal
- Serrate** Sharp, "saw-like" teeth
- Simple** Leaf consisting of one single blade
- Succulent** Describes plants that have thick fleshy leaves and stems that can store water
- Tepals** Petal-like structures without distinct sepals and petals
- Truncate** Abrupt end to a leaf base of tip
- Umbel** Inflorescence with pedicels all arising from the same point



1. *Alnus rhombifolia*, White Alder
2. *Araucaria bidwilli*, Bunya Pine
3. *Arbutus unedo*, Strawberry Tree
4. *Archontophoenix alexandrae*, King Palm
5. *Bauhinia acuminata*, White Orchid Tree
6. *Bauhinia forficata*, Orchid Tree
7. *Bauhinia variegata*, Purple Orchid Tree
8. *Brachychiton discolor*, Lacebark
9. *Brachychiton populneus*, Bottle Tree
10. *Callistemon citrinus*, Lemon Bottlebrush
11. *Cedrus deodara*, Deodar Cedar
12. *Cedrus libani*, Lebanon Cedar
13. *Ceratonia siliqua*, Carob Tree/St. John's Bread
14. *Cercidium floridum*, Blue Palo Verde
15. *Chamaerops humilis*, European Fan Palm
16. *Chilopsis linearis*, Desert Willow
17. *X Chitalpa tashkentensis*, Morning Cloud
18. *Chorisia speciosa*, Silk Floss Tree
19. *Citrus x sinensis*, Sweet Orange
20. *Cupaniopsis anacardioides*, Carrotwood
21. *Cupressus sempervirens*, Mediterranean Cypress
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37. *Laurus nobilis*, Sweet Bay
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39. *Liriodendron tulipifera*, Tulip Tree
40. *Magnolia grandiflora*, Southern Magnolia
41. *Melaleuca quinquenervia*, Punktree
42. *Metasequoia glyptostroboides*, Dawn Redwood
43. *Michelia champaca*, Banana Shrub
44. *Morus alba*, White Mulberry
45. *Nolina parryi*, Parry's Beargrass
46. *Olea europaea*, Olive Tree
47. *Parkinsonia aculeata*, Mexican Palo Verde
48. *Phoenix canariensis*, Canary Island Date Palm
49. *Phoenix reclinata*, Senegal Date Palm
50. *Pinus canariensis*, Canary Island Pine
51. *Pinus halepensis*, Aleppo Pine
52. *Pinus pinea*, Italian Stone Pine
53. *Platanus x acerifolia*, London Plane Tree
54. *Platanus occidentalis*, American Sycamore
55. *Platanus racemosa*, California Sycamore
56. *Plumeria sp.*, Plumeria
57. *Podocarpus gracilior*, Fern Pine
58. *Populus Fremontii*, Fremont Cottonwood
59. *Pyrus kawakamii*, Evergreen Pear
60. *Quercus agrifolia*, Coast Live Oak
61. *Quercus ilex*, Holly Oak
62. *Quercus lobata*, Valley Oak
63. *Rhus lancea*, African Sumac
64. *Salix babylonica*, Weeping Willow
65. *Schinus molle*, Pepper Tree
66. *Sequoia sempervirens*, Coast Redwood
67. *Syagrus romanzoffianum* (*Arecastrum romanzoffianum*), Queen Palm
68. *Tabebuia rosea*, Pink Trumpet Tree
69. *Taxus brevifolia*, Pacific Yew
70. *Tipuana tipu*, Tipu Tree/Rosewood
71. *Trachycarpus fortunei*, Windmill Palm
72. *Washingtonia robusta*, Mexican Fan Palm
73. *Yucca gloriosa*, Spanish Dagger
74. *Zelkova serrata*, Sawleaf Zelkova

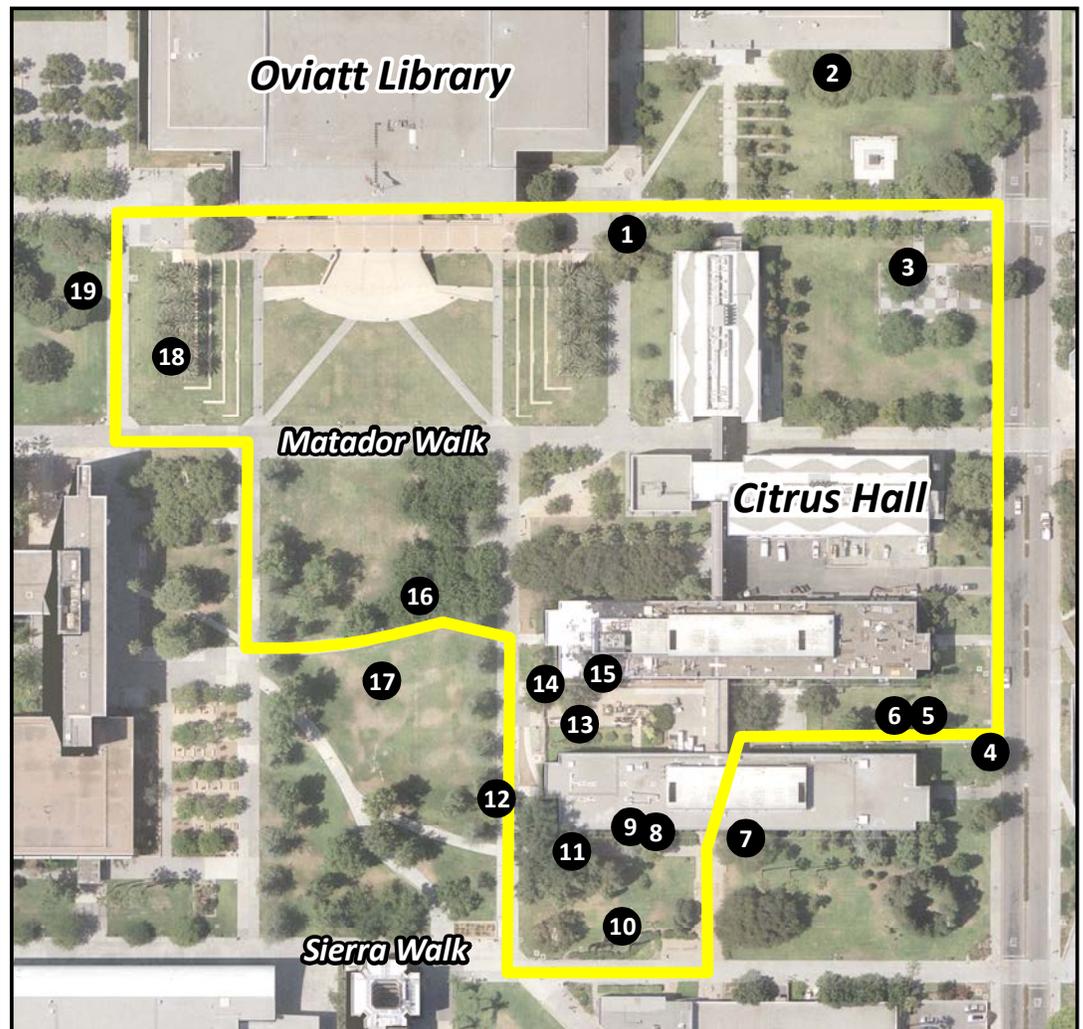
Note:
Each of the four walking routes features a specific set of trees. However, you will notice that many of the trees can be found on multiple walks. To see the additional tree species for each walk please refer to the Appendices.

Disclaimer:
Please do not touch, pick or eat any part of the plant, as some trees contain toxic compounds!

Walk 1: Oviatt Library/Matador Center



This walk begins and ends by the Oviatt Library, traversing the campus center. You will walk past the Matador Statue, our University's mascot, as well as Matador Square. The walk is 0.57 miles long.



0 70 140 280 420 Feet



Walk 1 Tree Species

- 1. *Platanus racemosa*, California sycamore
- 2. *Parkinsonia aculeata*, Mexican palo verde or Jerusalem thorn
- 3. *Tipuana tipu*, tipu tree or rosewood
- 4. *Grevillea robusta*, silk oak
- 5. *Metasequoia glyptostroboides*, dawn redwood
- 6. *Sequoia sempervirens*, coast redwood
- 7. *Bauhinia forficata*, Brazilian orchid tree
- 8. *Yucca gloriosa*, Spanish dagger
- 9. *Pinus halepensis*, aleppo pine
- 10. *Cupressus sempervirens*, Italian cypress
- 11. *Taxus brevifolia*, Pacific yew
- 12. *Liquidambar styraciflua*, sweet gum
- 13. *Lagerstroemia indica* 'Rubra', red crape myrtle
- 14. *Brachychiton discolor*, scrub bottle Tree
- 15. *Michelia champaca*, banana shrub
- 16. *Morus alba*, white mulberry
- 17. *Bauhinia acuminata*, dwarf orchid tree
- 18. *Phoenix canariensis*, Canary Island date palm
- 19. *Pinus pinea*, Italian stone pine



1. *Platanus racemosa*: California Sycamore

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Hamamelidales
Family	Platanaceae
Genus	<i>Platanus</i> L.
Species	<i>Platanus racemosa</i> Nutt.

This fast-growing deciduous tree can reach 75 feet in height, and can be found along creeks, foothills and coast ranges of California.

It will only be drought tolerant once established and where there is a high water table, or along the coast. It is a very important tree for wildlife, especially hummingbirds and butterflies. The Western Swallowtail uses it as a food plant.

The tree, native to California and Baja, has a stout trunk with a mottled-white bark. It is often branched near the base, with a broad, irregular, open crown of thick, spreading branches. It prefers full sun and a variety of moist soils.

The leaves are simple and alternate, 5-10 inches long, deep palmately lobed (3-5), and hairy when young. Petioles are long, hairy and swollen at the base.

The tree is monoecious; the tiny male and female flowers are borne in dense, round heads, followed by 3-7 round, golf ball-sized fruit, hanging on long, pendulous stalks.



2. *Parkinsonia aculeata*: Mexican Palo Verde



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae / Leguminosae
Genus	<i>Parkinsonia</i> L.
Species	<i>Parkinsonia aculeata</i> L.

Occurs naturally in subtropical, arid, and semi-arid regions of Mexico, Central America, South America, and parts of the southwestern United States.

It is a shrub or small tree which can grow 15- 30 feet tall, multi-stemmed, with long, graceful drooping branches bearing long delicate leaves and sprays of yellow flowers. The 5 yellow petals are almost equal, but one has a honey-gland at its base, which is red, and remains on the stalk longer than the others.

The seedpods are 3-5 inches long and narrow. The leaf stem produces 2 stalks, 15-18 inches long and almost parallel, with 10-25 pairs of leaflets, which usually fall off during summer.

It is a fast-growing tree, with green bark and thorns, which can grow in poor soils, is drought-heat and saline tolerant. In droughts, leaf-loss is no problem since chlorophyll production shifts to the green trunk and branches.

A hard coating around the seeds allows them to remain viable for many years until the conditions are right for germination. There are two types of seeds: about 25% will germinate right away, while the remaining seeds need scarification, or soaking, to germinate.

It naturalizes aggressively, has a fast growth-rate, and is considered a noxious weed.





3. *Tipuana tipu*: Tipu Tree/Rosewood

Kingdom	Plantae
Class	Spermatopsida
Order	Fabales
Family	Papilionaceae
Genus	<i>Tipuana</i>
Species	<i>Tipuana tipu</i> (Benth.) Kuntze

Native to South America, especially Bolivia, but also Argentina and southern Brazil, *Tipuana tipu* is an evergreen to partially deciduous tree, with an open umbrella-like canopy.

It can grow 35-50 feet in height, with lesser or equal spread. The leaves are pinnately compound, with 11-21 oblong leaflets and light-green in color.

Axillary clusters of showy, yellow to apricot-colored, pea-like flowers appear from late spring to early summer. They are followed by abundant winged pods, or samara, which are 2 ½ inches long.

This tree prefers to grow in full sun to partial shade. It is a mesic tropical tree, therefore in very dry locations it needs regular watering, but in more moderate areas, such as coastal regions, it is drought-tolerant.

Its dark-brown to streaked-gray single trunk is fissured, and when wounded, red sap will flow. It tolerates a wide variety of soils, except for strongly alkaline types.



4. *Grevillea robusta*: Silk Oak



Kingdom	Plantae
Class	Magnoliopsida
Order	Proteales
Family	Proteaceae
Genus	<i>Grevillea</i>
Species	<i>Grevillea robusta</i> A. Cunn. ex R. Br.

A native to coastal eastern Australia, the Silk Oak is a fast growing, medium to large, evergreen tree (25-65 feet), with little to no additional water requirements after it is established.

It sports odd-pinnately compound fernlike leaves which are grey at the bottom and green above, and which start to bloom in mid to late Spring.

Silk-oaks are tolerant of a wide variety of well-drained soils, but prefer slight acidity, in sunny to partial shaded areas. Their water requirement is low and they are drought-tolerant. However, severe moisture stress due to prolonged droughts can lead to disease susceptibility as they age.

At about 10 years of age the trees begin to flower in showy yellowish orange bottlebrush-shaped racemes up to 7 inches long, that occur in panicles of one to several branches.

The fruit, a hard dark-brown podlike follicle, 0.8 inches in diameter, is slightly flattened and has a long-curved style, which splits open in late fall to release the one or two seeds it contains, but remains on the tree up to 1 year after opening.

The tree is very attractive to bees, butterflies, humming birds and orioles, and it is a popular ornamental in landscaping.

The tree will flower more prolific in tropical areas, such as Hawaii and Florida and contains an allergen that causes dermatitis.





5. *Metasequoia glyptostroboides*: Dawn Redwood

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Cupressaceae
Genus	<i>Metasequoia</i> Miki ex Hu & W.C. Cheng
Species	<i>Metasequoia glyptostroboides</i> Hu & W.C. Cheng

This fast-growing tree is endangered and the sole living species in the genus *Metasequoia*. Since its rediscovery in 1943 it has become a popular ornament tree.

A conifer, native to China, it can grow 70-100 feet tall, and is considered a living fossil from the Pliocene (around 5 Million years old).

It prefers sun, and moist, well-drained soils which are slightly acidic. Its bark is reddish-brown when young, but grows darker and exfoliates in strips when mature.

This straight, single trunk tree forms a narrow conical crown. Its leaves are opposite, linear and two-ranked in a flattened display, resembling a feathery pinnately compound leaf, which is light-green in color.

The Dawn Redwood is monoecious; light-brown male flowers hang in narrow clusters up to 12 inches long, and the yellow-green female flowers are solitary and erect with fused scales.

The fruits are round to cylindrical cones (½-1 inch long) that hang on long stalks, containing small winged seeds, which mature in late fall.



6. *Sequoia sempervirens*: Coast Redwood



Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Cupressaceae
Genus	<i>Sequoia</i> Endl.
Species	<i>Sequoia sempervirens</i> (Lamb. ex D. Don) Endl.

The evergreen Redwood, native to North America, is a very tall, straight tree, which can grow over 300 feet tall, with a narrow, loose crown. It is the World's tallest tree, and is the State tree of California.

The tree's native range is from southwest Oregon to northwest California, and confined to coastal areas experiencing lots of fog, which alleviates drought stress. It is mainly found in alluvial soils.

Its canopy ecology is noteworthy, due to its trunk reiteration, with multiple stems originating as limbs from a central trunk, providing water storage sites, soil accumulation and habitats for a wide range of wildlife. It has a very thick, deeply furrowed, fibrous, reddish-brown bark, which is highly fire-resistant and can stump sprout, which helps it regenerate after fire events.

The leaves are linear, two-ranked and flattened, yellow-green to green in color with 2 distinct bands on the underside. The leaves on cone-bearing branches appear scale-like.

The tree is monoecious, both male and female flowers are very small and appear near the end of the shoots. Male flowers are oblong and female flowers are egg-shaped, followed by egg-shaped, reddish-brown, woody cones (3/4 to 1 inch long), which mature in one season. The twigs are slender and often drooping.

The Coast Redwood is the tallest tree on earth, and on a unit area basis, redwood forests have the highest biomass loadings of any ecosystem, and they have a very long life span (some trees can reach over 1,000 years of age).





7. *Bauhinia forficata*: Brazilian Orchid Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae / Leguminosae
Genus	<i>Bauhinia</i> L.
Species	<i>Bauhinia forficata</i> Link

Native to Brazil, the Orchid Tree is partly deciduous with a rounded, umbrella-like shape.

The tree is drought-tolerant, and moderately salt tolerant. The pods of this often multi-trunked tree do not attract wildlife. The hardy tree is a very popular flowering tree for open-space landscapes.

It can grow 25-35 feet tall with an equal spread, and can live up to 150 years. It prefers partial shade, moist loam or sandy soils, which can be highly acidic to slightly alkaline. The flowers appear in spring or summer, followed by large brown pods (3 inches long), which persist into fall.

The Orchid tree's simple, palmate, alternate leaves are lobed and have a cleft. Their color is medium-green and they are 2-4 inches long. The showy, white flowers are 3-4 inches wide, and orchid-like.

The leaves, used to make tea in South America, are believed to lower blood sugar levels and treat diabetes, and its wood is used to make charcoal.



8. *Yucca gloriosa*: Spanish dagger



Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Liliales
Family	Agavaceae
Genus	<i>Yucca</i> L.
Species	<i>Yucca gloriosa</i> L.

This single or multi-trunked evergreen shrub to tree, native to tropical areas of the southeastern United States from North Carolina to Florida, can grow up to 10 feet in height, with an 8 foot spread.

It is a popular accent plant, giving a tropical effect. It can grow in full sun but also tolerates shade, needs regular watering, and uniform soil with good drainage.

Its sword-like leaves are roughly 2 inches wide and 2-3 feet long, bluish to grayish-green in color, with smooth margins and pointed tips.

In summer, the yucca produces a 6-8 foot spike of fragrant, showy, white flowers that are 3 inches across, followed by insignificant fruit. Yuccas are only pollinated by the yucca moth.

For several years it will remain a stem-less clump (2-5 feet across), but eventually develops a stem which elevates the clump of leaves off the ground. Older plants develop branches and each terminus has its own set of rosette leaves.

Despite its common name "Spanish Dagger" it does not have the stiff needle-sharp leaf tips like some other yuccas.





9. *Pinus halepensis*: Aleppo Pine

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	<i>Pinus</i> L.
Species	<i>Pinus halepensis</i> Mill.

The Aleppo Pine, native to the Mediterranean region, prefers full sun, but will tolerate part shade while young.

This evergreen tree grows at a medium rate, and can tolerate sandy to loamy soils, a variety of pH levels, even nutrient-poor soils, as long as they are well-drained.

The tree is wind and somewhat drought-tolerant. However, without regular watering the tree may drop needles.

It can grow 30-60 feet, with a 20-40 foot spread. It has a pyramidal form when young, but the crown grows rounded, or irregular, and open with age, with large lateral branches.

The pine has short needles (2-3 inches long), with a fine appearance, growing two per bundle.

The monoecious flowers are insignificant, small, brown bundles, growing on branch terminals. The 3-inch long cones are round or oval in shape, rather than conical.

The resin from the trunk is used for chewing and flavoring wine.



10. *Cupressus sempervirens*: Mediterranean Cypress



Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Cupressaceae
Genus	<i>Cupressus</i> L.
Species	<i>Cupressus sempervirens</i> L.

The evergreen Italian Cypress is a columnar, tall, narrow and dense tree, which can grow 40-60 feet tall, with a spread of 10 feet or less.

It prefers to grow in well-drained sandy loams with medium moisture. The cypress has been planted in classic Italian gardens since the Renaissance.

It features dark gray-green needle-like scaly leaves on upright branches, which are aromatic when crushed.

The flowers are inconspicuous, and the cones round and small (1.5 inches in diameter). It has a single, gray colored, straight trunk.

The tree, native to southern Europe and Asia, is often used to line driveways or entryways, and is a popular accent piece for landscaping.

It needs full sun and is drought-tolerant once established. The trees can be vulnerable to spider mite infestations.

It is also known for its very durable, scented wood, used most famously for the doors of St. Peter's Basilica in the Vatican City, Rome.

Cypress used to be used in distilleries as staves to hold mash ferments to make alcohol before the invention of stainless steel.





11. *Taxus brevifolia*: Pacific Yew

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Taxales
Family	Taxaceae
Genus	<i>Taxus</i> L.
Species	<i>Taxus brevifolia</i> Nutt.

The slow-growing, but long-lived Pacific Yew, is a small, evergreen understory tree with an indistinct growth form, rarely reaching 50 feet in height.

Its native range is the Pacific Northwest, but due to over-harvesting has become an endangered species.

The tree prefers dappled sun to part shade and can tolerate a variety of soil and moisture levels.

Its trunks are fluted and asymmetrical, with a thin, reddish-brown, scaly bark. The evergreen needles, single and spirally-arranged, appear 2-ranked, with a pointed, but not sharp apex. The tree is dioecious.

Male flowers, small, round and yellow, are borne on the underside of the leaves, whereas female flowers are solitary, followed by round, fleshy, orange-red fruit (aril), containing one hard seed exposed at the end. The arils are a favorite among birds, which also act as their main disperser.

All species of yew contain highly poisonous alkaloids known as taxanes; the only part of the tree that does not contain them is the aril, which is edible and sweet, but the seed is poisonous. This can have fatal results if the 'berries' are eaten without first removing the seeds.

The springy wood was traditionally used to make bows, and today the trees are widely used in landscaping and ornamental horticulture, as well as in the manufacturing of the chemotherapy drug *paclitaxel* (Taxol), used in breast, ovarian and lung cancer treatment.



12. *Liquidambar styraciflua*: Sweetgum



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Hamamelidales
Family	Hamamelidaceae
Genus	<i>Liquidambar</i> L.
Species	<i>Liquidambar styraciflua</i> L.

The fast-growing, deciduous Sweetgum grows up to 75 feet in cultivation, but can reach 130 feet in the wild.

The tree needs moist, acidic soils, and prefers alluvial loams, sand and clay. It is not drought-tolerant.

This large open-crowned tree, with its straight trunk, is native to the United States, Mexico and as far south as Nicaragua.

Great attributes of the sweetgum are its ability to provide shade, fix nitrogen in the soil, and its resistance to insect attacks. The tree likes to grow in sun to partial shade.

The simple leaves are glossy-green, with five deep lobes resembling a star shape. In fall, the foliage turns red and purple, even without cold temperatures.

The fruits are round, thorny, woody balls (roughly 1 inch in diameter), hanging on long stems and persisting through winter. The seeds attract birds and some mammals.

It is an important timber tree, especially for furniture production. In pioneer days the gum was used medicinally, as well as for chewing gum.





13. *Lagerstroemia indica* 'Rubra': Red Crape Myrtle

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Lythraceae
Genus	<i>Lagerstroemia</i> L.
Species	<i>Lagerstroemia indica</i> 'Rubra' L.

The deciduous Crape Myrtle, native to the Indian Subcontinent, Southeast Asia, northern Australia and parts of Oceania, grows 10-20 feet in height and 8 feet wide.

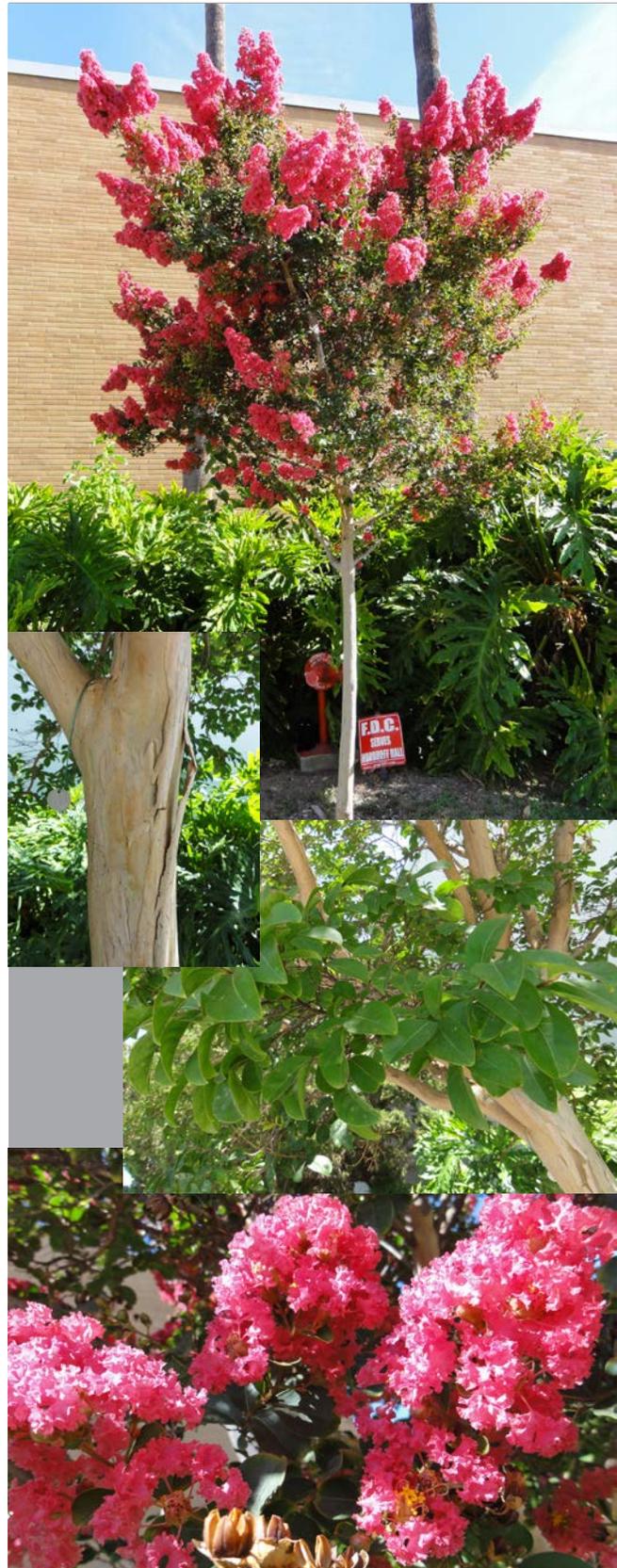
It prefers full sun, has average water needs and can tolerate acidic soils. Supplemental water is needed during dry periods, though once established, the trees are drought-resistant.

The alternate, oblong-elliptical to rounded leaves are up to 2.75 inches long. The young leaves in spring are reddish and the smooth bark comes off in big flakes.

The tree is often multi-stemmed and a floral highlight with blooms from mid-summer to early fall. Its crimped petals are intense pink to red in color, attached to on up to 8 inch high panicles on the tips of the new branches.

After the flowers fade, the fruit, which are small, brown capsules, remain throughout the winter.

The tree is a favorite among gardeners due to its low maintenance and beauty, and can tolerate heat.



14. *Brachychiton discolor*: Lacebark



Also called Scrub Bottle Tree

Kingdom	Plantae
Class	Equisetopsida
Order	Malvales
Family	Malvaceae
Genus	<i>Brachychiton</i>
Species	<i>Brachychiton discolor</i> F. Muell

The Lacebark tree is native to Australia, where it is distributed from central New South Wales to southern Queensland.

The tree is partly-to-completely deciduous and is very popular in cultivation.

The tree can grow 40-60 feet tall, with a width of 30 feet. It is drought-tolerant, and prefers full sun to partial shade. It can grow in sandy or loamy, slightly acidic to highly alkaline soils.

The leaves are ovate to palmately lobed and blue-green in color.

The medium-size tree displays large, showy, bell-shaped, deep-pink flowers, that occur in clusters at the end of the branches.

The flowers are followed by capsules, which contain many large seeds (3 inches long), surrounded by irritant hairs. Both the flowers and the fruit are covered in dense, rusty velvet.

The tree blooms in summer or fall, after shedding its leaves. The bark is gray-brown and ridged. The trees live 50-150 years.

The roasted seeds are eaten by the Aborigines.





15. *Michelia champaca*: Banana Shrub

Kingdom	Plantae
Class	Spermatopsida
Order	Magnoliales
Family	Magnoliaceae
Genus	<i>Magnolia</i>
Species	<i>Magnolia champaca</i> (L.) Baill. ex Pierre

Native to India and Southeast Asia, this tree can reach 25-40 feet in height in cultivation, but up to 100 feet in its native range.

It prefers full sun and needs to be watered regularly to establish a deep root system, after which watering can be reduced.

It has a smooth bark, and bright-green, glossy leaves, with prominent veins, wavy edges and a finely pointed apex, or “drip dip.”

The flowers, borne along stems in the leaf axils, have 10-20 yellow, orange or cream-colored tepals (petal-like structures without distinct sepals and petals). Its fruits are oblong, brown follicles that split at maturity, exposing red seeds.

The tree was traditionally used to make fragrant hair and massage oils, and the essential oils from the flowers are one of the main ingredients of Jean Patou’s famous perfume ‘Joy,’ the second best selling perfume in the world after Chanel No. 5. The tree is also logged for its valuable timber used for furniture making and cabinetry.

This evergreen tree is a very popular landscape addition, due to its abundant display of very fragrant, yellow flowers and broad, mature form.

The tree is esteemed by Hindus and Buddhists and is often found on temple grounds.



16. *Morus alba*: White Mulberry



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Urticales
Family	Moraceae
Genus	<i>Morus</i> L.
Species	<i>Morus alba</i> L.

Native to eastern and central China, this large tree can grow up to 60 feet tall and equally wide, but the male fruitless cultivars are smaller growing 35-40 feet in height and spread.

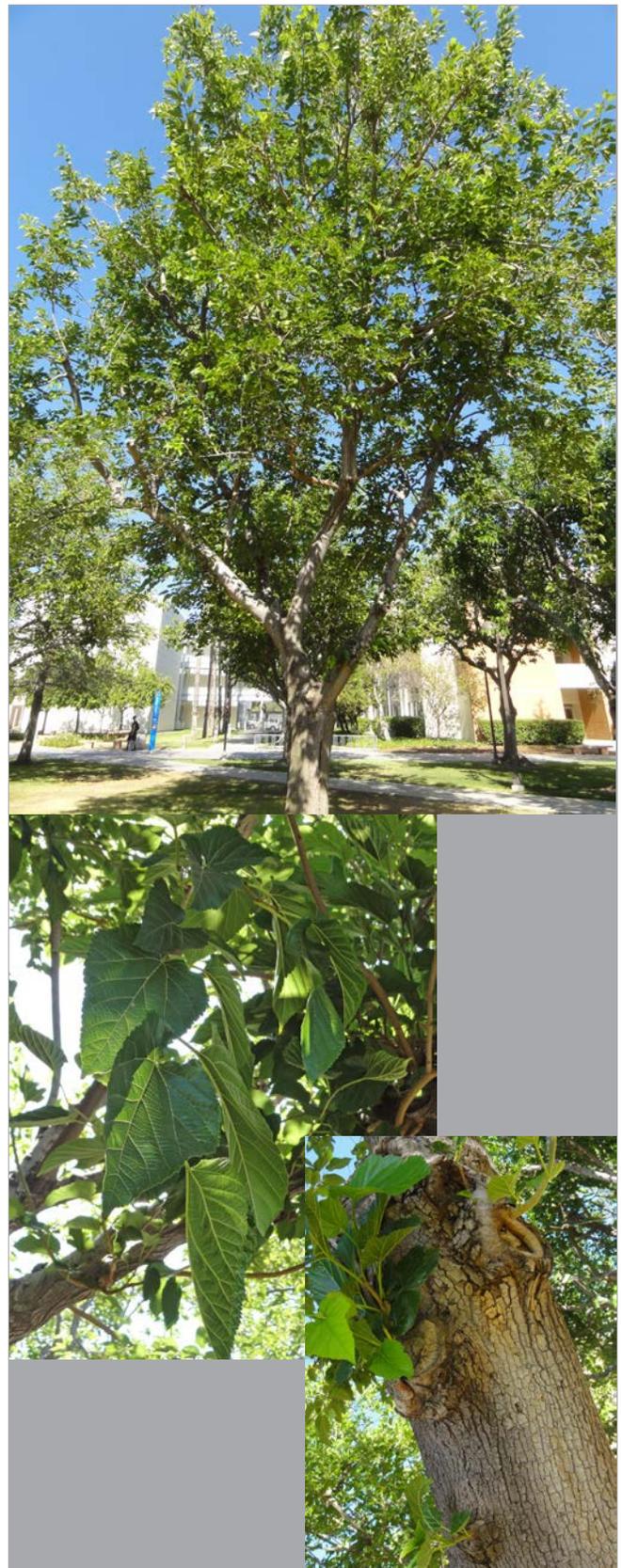
The moderate to rapidly growing tree has a broad, round appearance. It is very tolerant to urban conditions and will grow in a variety of soils, except saturated.

Its foliage consists of simple, alternately arranged leaves of dark-green color, which can be lobed or ovate. Both shapes are found on the same branch, and both have sharp acute tips.

Plants can be both monoecious or dioecious, with small, greenish flowers on hanging catkins. Cultivars are usually fruitless. In hot, humid environments the tree is susceptible to various diseases.

Though most cultivars are fruitless, the fruit is edible and is used in jams, jellies and pies. *Morus alba* hybridized with native red mulberry species in the United States, which rendered the native tree 'endangered' in Connecticut and Massachusetts, and 'threatened' in Vermont and Michigan.

The white mulberry is the food source of silk worms and was introduced into North America to start silk manufacturing, and is also used for timber, papermaking and medicinal materials in its native range.





17. *Bauhinia acuminata*: Dwarf Orchid Tree

Kingdom	Plantae
Class	Magnoliopsida
Order	Fabales
Family	Leguminosae
Genus	<i>Bauhinia</i>
Species	<i>Bauhinia acuminata</i> L.

Native to Southeast Asia, the orchid tree is deciduous and grows 6-8 feet tall.

It prefers full sun to partial shade and well-drained soils. It is moderately drought-tolerant once established, and can adapt to a variety of soil pH levels.

The leaves are 4 inches long, broad and bi-lobed to about one third of their length, resembling the hoof of a cow.

The large, white, fragrant flowers, appearing at the extremities of the branches, have 5 petals, 10 yellow-tipped stamens, and a green stigma.

The beautiful blossoms are followed by 3-5 inch long, dark-brown, oblong pods, containing 10 round and compressed seeds.

Traditional medicine used the bark, leaves, flowers and the roots to treat a variety of illnesses, such as gastrointestinal and respiratory diseases.

Disclaimer:

The plaque on the lawn by the tree identifies this species as *Bauhinia Forticata*.



18. *Phoenix canariensis*: Canary Island Date Palm



Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Arecales
Family	Areaceae / Palmae
Genus	<i>Phoenix</i> L.
Species	<i>Phoenix canariensis</i> hort. ex Chabaud

Native to the Canary Islands, off the coast of northwest Africa, this perennial, slow-growing palm can grow 40-60 feet tall, with frond spreads 20-60 feet wide.

The tree prefers full sun, well-drained, uniform sand or loam soils, and only needs infrequent, deep watering.

These imposing palms are popular landscape additions in frost-free climates around the world, and adult plants are drought-resistant.

The massive trunk (4 feet in diameter) is covered with diamond-shaped designs that mark the point of attachment of the leaves.

The leaves are pinnate, feather-like fronds, which arch at the top and can grow 15-20 feet long with toothed petioles.

On brush-like stalks, 3-6 feet long, clusters of small white flowers will grow (male and female flowers will grow on separate trees), which turn into round yellow-orange date-like fruit on the female trees, and are ½-1 inch across. The dates are very decorative and are edible, but not tasty.

It is considered an invasive by the California Invasive Plant Council (2014).





19. *Pinus pinea*: Italian Stone Pine

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	<i>Pinus</i> L.
Species	<i>Pinus pinea</i> L.

The evergreen Italian Stone Pine, native to southwest Europe and the Mediterranean region, can reach 80-100 feet in height, but is mostly seen at 35-60 feet with a 35-45 foot spread.

It grows best in full sun, well-drained clay, loam or sandy soils, and is very drought tolerant. The thick, deeply fissured bark is reddish-brown with black edges to the plates.

It has a round or vase-like shape, with a symmetrical, dense canopy. Its leaves are simple, filiform (needle-like), arranged alternate, 2-4 inches long and green colored.

The inconspicuous flowers are yellow and not showy, followed by round to oval brown, hard fruit (1-3 inches), which does not attract wildlife, but is suited for human consumption.

The seeds inside the cones called pignolia, or pine nuts, can be eaten raw or roasted and are a favorite ingredient in some traditional Italian dishes.

The cones ripen three years after pollination, which is the longest maturation period of any pine.

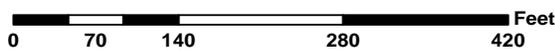
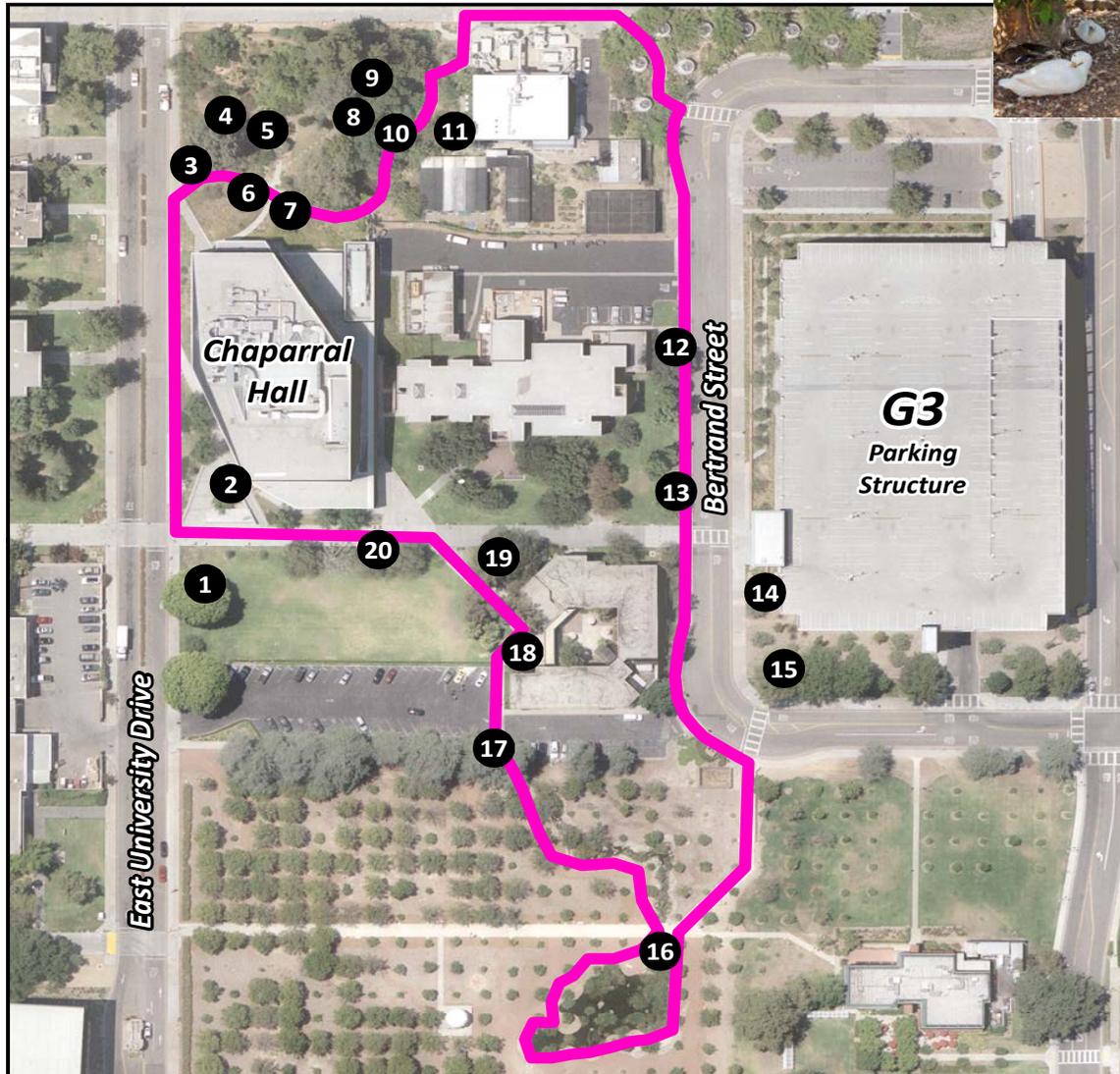
The trees are popular landscape accents and provide good erosion control and shade.



Walk 2: Southeastern Corner Citrus Grove



This walk starts and ends by Chaparral Hall and leads through the Botanic Garden (open Mon-Fri 8:00am-4:45pm, except on campus holidays), which you can explore at your own leisure. Eventually you will stroll through the Citrus Grove with the duck pond and creek, by the Observatory. This walk is 0.55 miles long.



Walk 2 Tree Species

- | | |
|--|--|
| ● 1. <i>Ficus microcarpa</i> 'Nitida', Indian laurel fig | ● 11. <i>Plumeria</i> , plumeria |
| ● 2. <i>Populus nigra</i> v 'Italica', black poplar | ● 12. <i>Quercus ilex</i> , holly or holm oak |
| ● 3. <i>Cercidium floridum</i> , blue palo verde | ● 13. <i>Liriodendron tulipifera</i> , tulip tree |
| ● 4. <i>Nolina parryi</i> , perry's beargrass | ● 14. <i>Chitalpa tashkentensis</i> , morning cloud chitalpa |
| ● 5. <i>Draceno draco</i> , dragon tree | ● 15. <i>Fraxinus velutina</i> , Arizona ash |
| ● 6. <i>Chilopsis linearis</i> , desert willow | ● 16. <i>Citrus sinensis</i> 'Valencia', valencia orange |
| ● 7. <i>Eucalyptus deglupta</i> , rainbow eucalyptus | ● 17. <i>Cedrus deodara</i> , Deodar cedar |
| ● 8. <i>Quercus agrifolia</i> , coast live oak | ● 18. <i>Phoenix reclinata</i> , Senegal date palm |
| ● 9. <i>Archontophoenix alexandrae</i> , king palm | ● 19. <i>Melaleuca quinquenervia</i> , punktree |
| ● 10. <i>Quercus lobata</i> , valley oak | ● 20. <i>Geijera parviflora</i> , Australian willow |





1. *Ficus microcarpa* 'Nitida': Indian Laurel Fig

Kingdom	Plantae
Class	Spermatopsida
Order	Rosales
Family	Moraceae
Tribe	Ficeae
Genus	<i>Ficus</i> L.
Species	<i>Ficus microcarpa</i> var. <i>nitida</i> (King) R.R.Fernandez

The Indian Laurel Fig is native to India and Malaysia. It requires regular watering and can grow an extensive matrix of roots. If not watered sufficiently the roots will grow near the surface and can tear up sidewalks and housing foundations.

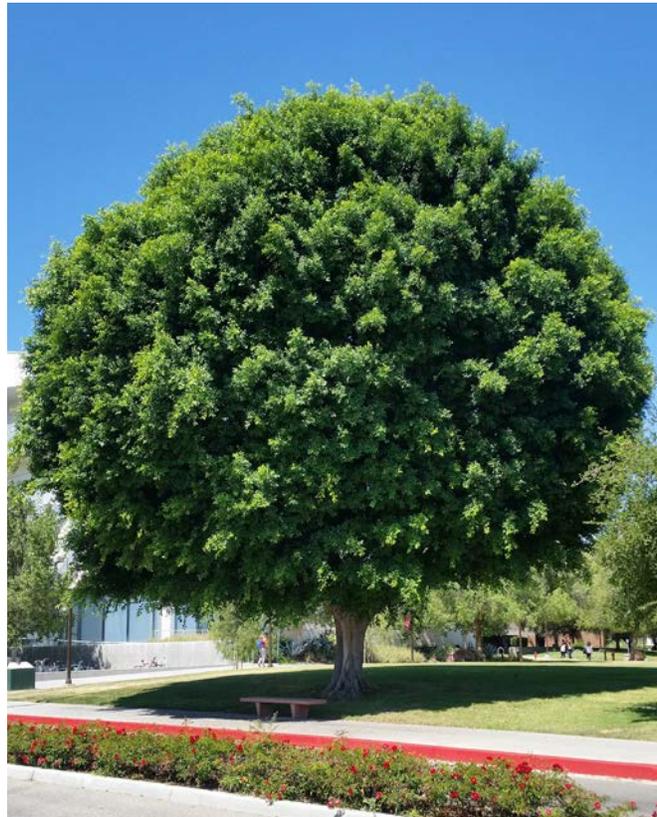
It prefers full sun to partial shade and can grow in sandy or loamy soil with slight acidity to high alkalinity.

The tree can grow from 25-80 feet in height with equal width. It has an oval or rounded shape, and can live up to 150 years.

The tree is monoecious, with inconspicuous flowers in winter, and small, round, green fruit in spring, which turn black.

Its lustrous, glabrous oval leaves taper to acuminate tips, which are dark green in color. It is a widely used ornamental tree.

The tree has a symbiotic relationship with a pollinating fig wasp (*Eupristina verticillata*), and is very popular with avian wildlife.



2. *Populus fremontii*: Fremont Cottonwood



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Malpighiales
Family	Salicaceae
Genus	<i>Populus</i> L.
Species	<i>Populus fremontii</i> S. Watson

Native to the Southwest United States, the Fremont Cottonwood occurs in riparian areas near streams, rivers, and wetlands. It also occurs in the Sonoran and Chihuahuan deserts of Mexico. It is a fast growing, tall, columnar tree that prefers full sun. Fremont Cottonwoods are winter deciduous trees that are cold hardy to 6500 feet and 15 degrees.

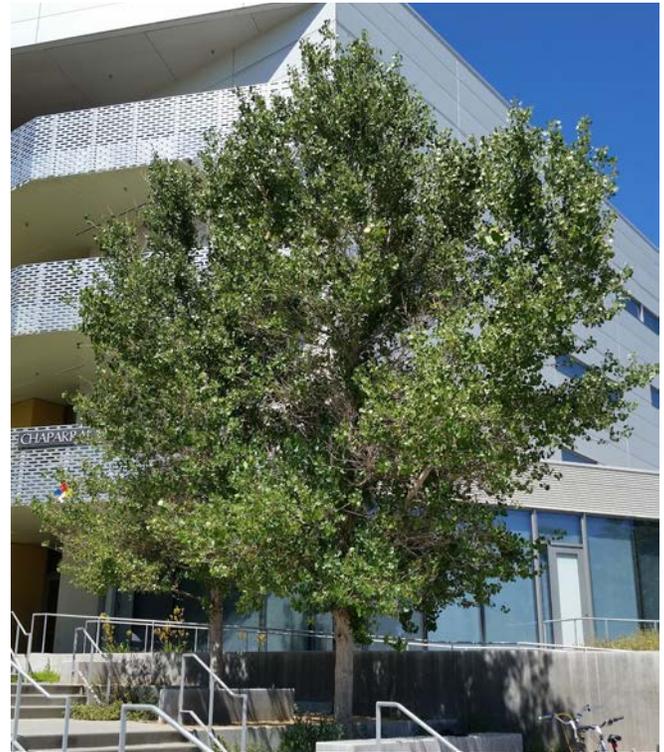
Cottonwoods can grow 60 feet tall and 30 feet wide, and are best planted in open spaces. They are adaptable to different soils, but prefer bare gravel or sand substrate. They require regular water and do best in locations with underground aquifers.

The bark is smooth in younger trees and becomes deeply furrowed with whitish cracked bark as it ages. The leaves are cordate with white veins and coarse crenate-serrate teeth on the margins. They are simple, 2-3 inches across and bright green. The leaves turn bright yellow to gold in the fall, and resemble Aspen trees.

The trees are dioecious with catkins appearing on the males in Spring. Female plants produce clusters of capsules containing small seeds and release a cotton-like substance.

The bark and leaves can be used to treat bruises, insect stings, muscle strain and sore throats.

The Hopi Indians of Arizona consider the tree sacred and carve Kachina dolls from the roots.





3. *Cercidium floridum*: Blue Palo Verde

Kingdom	Plantae
Class	Spermatopsida
Order	Fabales
Family	Leguminosae
Genus	<i>Cercidium</i>
Species	<i>Cercidium floridum</i> A.Gray

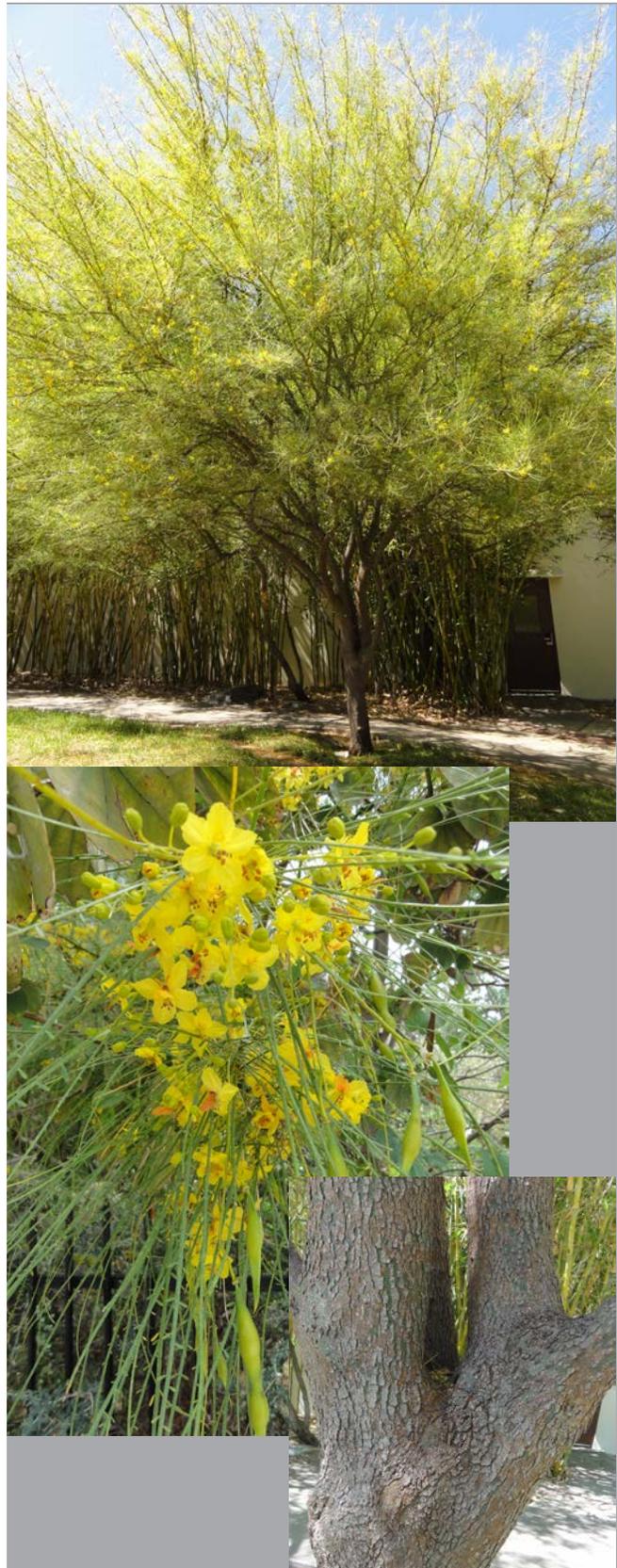
The Blue Palo Verde is native to the Sonoran Desert of Arizona and Sonora, Mexico, as well as the Colorado Desert subdivision of the Sonoran Desert in California. In addition, there are a few scattered stands in the Mojave Desert of California.

Since this plant is native to Southwestern deserts, it is naturally adapted to dry desert conditions and has very low water requirements.

It is a multi-stemmed tree with a rounded crown, which is deciduous in drought or cold. It grows 15-30 feet tall with equal spread. The trunks are normally green, growing darker with age, and the tree has an overall bluish cast. It needs full sun and good drainage

The leaves, bipinnately compound, grow in pairs, ½ inch long, but the tree is often leafless much of the year. Bright yellow blooms cover the entire tree in springtime, followed by 1½-3 inch-long seed pods.

The fruits, twigs, and leaves of Blue Paloverde are used as livestock forage, and its flowers attract bees, beetles, and flies for pollination. Historically, the Pima and Papago Native Americans used its fruits for porridge. The Pima also carved Blue Palo Verde into spoons.



4. *Nolina parryi*: Parry's Beargrass



Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Liliales
Family	Liliaceae
Genus	<i>Nolina</i> Michx.
Species	<i>Nolina parryi</i> S. Watson

Parry's Beargrass, a perennial shrub to tree, is native to the southwestern United States and Baja California, with large, woody basal stems growing in a clump.

It is one of the largest and showiest of the species in this genus. It prefers to grow in full sun on dry, rocky slopes below 3000 feet, and is very drought-tolerant.

It is a slow-growing plant, similar to *Yucca*, and can grow over 6 feet in height and spread up to 15 feet wide. It is dioecious, with separate male and female plants.

Its coarse-bladed leaves, which are more flexible than those of the *Yucca*, grow in dense rosettes. They are 18-30 inches long and gray-green in color.

From April-June a 3-5 foot flowering stem, with a dense cluster of tiny, white to cream-colored flowers, grows from the middle of the leaf rosette.

The leaves were woven into baskets or mats and the young stems were used for food by Native Americans.

This particular specimen in the Botanic Garden is 40-50 years old.





5. *Dracaena draco*: Dragon Tree

Kingdom	Plantae
Division	Tracheophyta
Class	Magnoliopsida
Order	Asparagales
Family	Asparagaceae
Genus	<i>Dracaena</i> L.
Species	<i>Dracaena draco</i> (L.) L.

The Dragon Tree is native to Cape Verde, Madeira and the Canary Islands, where it is the symbol of Tenerife.

It is drought-tolerant, can adapt to winds, salt and extreme heat, and is very hardy. It grows a ringed, succulent trunk, which is topped by clusters of flexible sword-like blue-green leaves.

It grows well in full sun or part shade, but needs good drainage. Evergreen dragon trees can grow over 40 feet tall, and have very long life spans; one tree growing in northwest Tenerife is said to be 650 years old.

The tree is unbranched until it flowers, but thereafter will produce branches from the sides of its inflorescence, which happens at around 10-15 years of age. At that time, the stem stops growing and produces a flower spike with white, perfumed flowers, which bloom from late winter to early spring. The flowers are followed by coral berries.

Thereafter, a crown of terminal buds appear and the tree starts branching. After another 10-15 years of growing, each of the new branches re-branches, until the tree takes on an umbrella-like shape. Dragon trees do not have annual rings; the age of the tree can only be determined by the number of branch forking occurrences.

The leaf scars on the trunk resemble the skin of a reptile, and it 'bleeds' a red sap, called 'Dragon's Blood,' which is used to stain wood.

This unique tree is now endangered in its native habitat.



6. *Chilopsis linearis*: Desert Willow



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Bignoniaceae
Genus	<i>Chilopsis</i> D. Don
Species	<i>Chilopsis linearis</i> (Cav.)

The Desert Willow is a fast-growing, small deciduous shrub or small tree, reaching 15-40 feet in height.

The tree, native to the south-western United States, is drought and heat tolerant, likes full sun exposure and prefers well-drained limestone soils, but also does well in sand, clay and rocky soils, and tolerates seasonal flooding.

The light-green leaves are both opposite and alternate, 4-12 inches long and 1/3 inch wide. Its willow-like, long narrow leaves, along with the fact that it grows near waterways in deserts, give the tree its common name.

Flowers appear from May through September, and are a favorite of hummingbirds, butterflies and birds, and make the tree a popular ornamental for landscaping. The fragrant flowers, borne in terminal racemes on current-year shoots, are funnel-shaped, about 1 ½ inches long, spreading at the opening into 5 ruffled, pedal-like lobes. Their color is white to pink, lavender, or purple, with white and yellow streaks within the throat.

After summer, the flowers are replaced by long, slender seedpods, 6-10 inches long, dangling from the branches.

Its beautiful blooms, rapid growth rate, drought tolerance, and ease of maintenance have made the Desert Willow a sought-after plant.





7. *Eucalyptus deglupta*: Rainbow Eucalyptus

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Myrtaceae
Genus	<i>Eucalyptus</i>
Species	<i>Eucalyptus deglupta</i> Blume

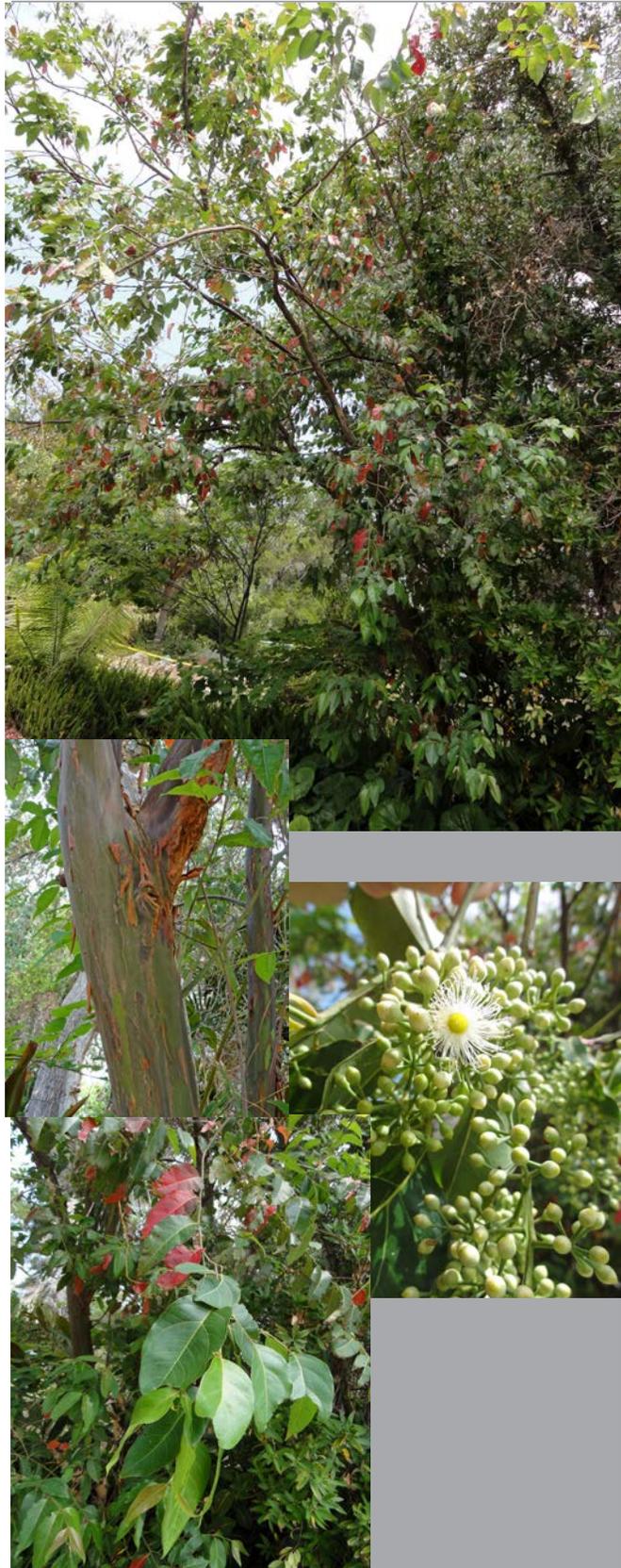
Native to the rainforests of Mindanao in the Philippines, the fast-growing Rainbow Eucalyptus reaches on average about 80 feet in height. It prefers humid, tropical climates, unlike *Eucalyptus* species native to Australia.

The tree tolerates slightly acidic to highly alkaline, loamy or sandy soils and high rainfall. It prefers full sun and cannot tolerate frost. It generally lives 50-150 years.

The tree's beautiful, peeling bark displays a rainbow of colors. Its hardwood is red and used as timber and ornamental wood, and its leaves have a slightly fragrant aroma, albeit less intense than other *Eucalyptus* trees.

Its small, white, showy flowers are followed by tiny, winged, dark brown pods, containing 3-12 seeds.

The Rainbow Eucalyptus is the only *Eucalyptus* species found naturally in the Northern Hemisphere. This evergreen tree is in high demand due to its colorful bark. It does not, however, produce the aromatic oils that other *Eucalyptus* species produce.



8. *Quercus agrifolia*: Coast Live Oak



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fagales
Family	Fagaceae
Genus	<i>Quercus</i> L.
Species	<i>Quercus agrifolia</i> Née

The Coast Live Oak, native to California, Baja, and Southern Oregon, is one of the most common and well-known oaks throughout California. It is a round-domed, evergreen trees which can grow up to 100 feet tall.

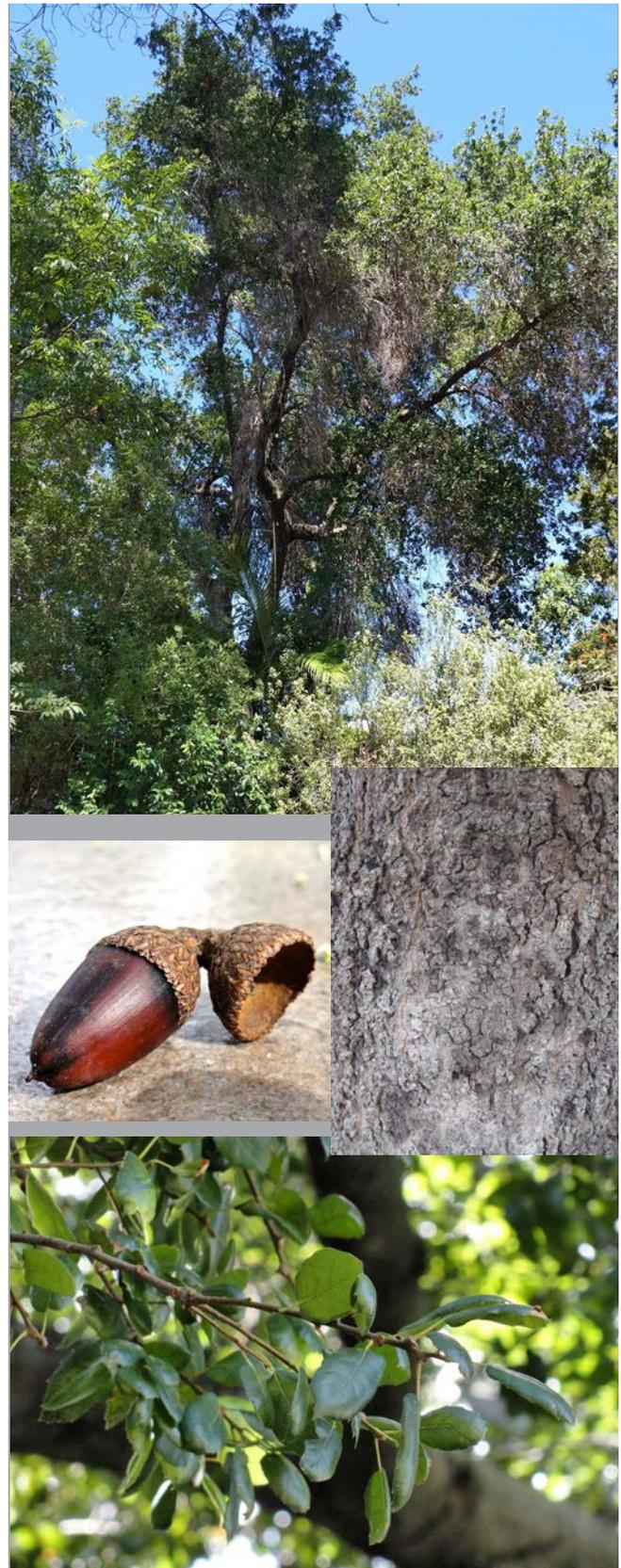
This oak needs well-drained soils and little to no watering, as it is well adapted to long dry seasons. Near the ocean, coastal fog generally supplies sufficient moisture. Frequent watering and moisture on the trunk during the summer months makes it vulnerable to Armillaria Root Fungus (*Armillaria mellea*). In addition, it does not like compacted soil or concrete up against the trunk, as this prevents normal wetting, drying and breathing.

The slow-growing and long lived tree has numerous, large and spreading branches, and their crown spread can exceed its height.

The shiny, concave, green leaves are 1-2½ inches long, stiff and curved under with sharp spines around the edges. They are monoecious and wind pollinated. Male flowers grow in long, drooping catkins of yellow-green color (2-4 inches) and females have inconspicuous reddish-green spike in the leaf axils.

The oak tree produces thin and pointed acorns that are about 1-1 ½ inches long situated inside a scaly gray-brown cup. Acorns were a food staple for Native Americans, and are very popular with many wildlife species, especially birds and butterflies.

Nowadays, Coast Live Oaks are often used in landscaping. Historically, they served as a lucrative supply in shipbuilding, as well as in the charcoal industry.





9. *Archontophoenix alexandrae*: King Palm

Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Arecales
Family	Areaceae
Genus	<i>Archontophoenix</i> H.
Species	<i>Archontophoenix alexandrae</i> (F. Muell.) H. Wendl. & Drude

This majestic palm grows 50-80 feet tall, with a 10-15 foot spread. Native to Queensland, Australia, this fast-growing palm has a growth rate of 1-3 feet per year.

Young trees prefer partial shade, but mature trees tolerate full sun. They have high water requirements, since they naturally occur in coastal rainforests, but are moderately drought-tolerant when mature.

The smooth and slender trunk is light gray in color, ridged with old leaf bases, and a green crown shaft. The canopy consists of 8-12 pinnate fronds, up to 7 feet long. The leaflets are bright green above and white-silver underneath.

Below the crown shaft, long cream stalks are formed, which can be up to 3 feet long, with small lilac flowers. Male and female flowers can be found on the same inflorescence.

The fruits are round, pea-sized, and become bright red when they are ripe. The tree is propagated from seed.

King Palms are very popular ornamentals in their native Australia and around the world, and can be grown solitary or in clusters.



10. *Quercus lobata*: Valley Oak



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fagales
Family	Fagaceae
Genus	<i>Quercus</i> L.
Species	<i>Quercus lobata</i> Née

The Valley Oak is the largest of all North American oaks, reaching 100 feet in height with trunks of up to 7 feet in diameter.

The trees, which can spread 30-50 feet, prefer full sun, deep, average-moist soils with good drainage. Native to California, this tree is considered an opportunist, able to exploit environments that typically do not favor many plant species.

Its tap root can reach up to 60 feet deep in search of ground water when it is young. Once the tree matures the tap root sloughs off and instead a tiered root system develops, reaching 2-4 feet below the surface, allowing the tree to survive drought conditions.

Young barks are thin, gray, checkered and thinly fissured, whereas older barks are deep, dark gray and deeply fissured.

Valley Oaks are deciduous, and their leaves are alternate and simple, 2-4 inches long. They are formed with deep, rounded lobes, dull-green in color above, and pale green below.

One characteristic of the Valley Oak is the appearance of galls called 'oakapples,' which are a result of gall wasps laying eggs at the base of vegetative buds along stems. Plant hormones trigger a protective growth around the developing larvae, creating the galls.

Timed by temperature change, the monoecious tree's male flowers are yellow-green catkins (1-2 inches long). The small female flowers are borne in spring on leaf axils of current year's twigs, and are followed by long, conical acorns, with warty knobs on the caps. The acorns provide food for wildlife.

Can live 300-400 years.





11. *Plumeria* sp: Plumeria

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Gentianales
Family	Apocynaceae
Genus	<i>Plumeria</i> L.
Species	<i>Plumeria</i> sp. L.

Plumeria, sporting the famous Hawaiian lei flower, is native to tropical and subtropical areas of Central and South America.

It is a deciduous shrub or small tree, related to the Oleander, and both possess poisonous, milky sap. The tree can reach up to 20 feet in height, and is multi-branched with thick foliage.

Though thought of as a tropical plant, it also does well in sub-tropical areas because it goes dormant shedding its leaves, or simply stopping growth, when the weather gets cool.

The tree prefers filtered sun and well-drained, moist soils, but is tolerant of a variety of soil conditions.

There are numerous species of plumeria and each bear differently shaped alternate leaves.

In spring - summer, the tree produces flowers (about 2 inches long) in a variety of color ranging from white to yellow and pink. The flowers are most fragrant at night in order to lure the sphinx moth for pollination. However, the flowers have no nectar, but pollinators inadvertently transfer pollen from flower to flower in their search for it.



12. *Quercus ilex*: Holly Oak



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fagales
Family	Fagaceae
Genus	<i>Quercus</i> L.
Species	<i>Quercus ilex</i> L.

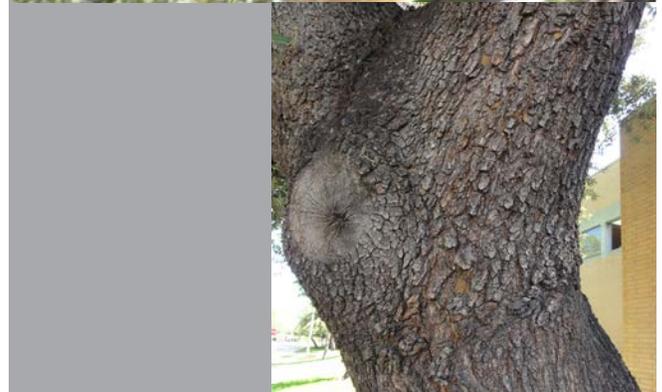
This evergreen tree, native to southern Europe and northwestern Africa, can grow 65-100 feet tall, with a dense rounded form.

The Holly Oak is slow-growing and suitable for a variety of soils - sand, loam and clay, including very alkaline soils. It prefers well-drained, moist soils and can tolerate maritime exposure.

The bark is nearly smooth or finely scaly and gray in color. The leaves are simple, alternate and ovate to lanceolate in shape, with a leathery texture and an acute tip. Their color is dark-green, glossy above and yellowish or whitish below, with a rounded base and serrated margins.

The yellow-catkin flowers are monoecious and wind-pollinated. Flowers bloom from May-June and the seeds ripen from September-October.

The fruit, ovoid acorns, are half-enclosed by a scaly cup. They are edible, though at times need to be leached to remove bitter tannins, and are used for making bread, or mixed with cereal. Roasted, they are used as a coffee substitute.





13. *Liriodendron tulipifera*: Tulip Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Magnoliales
Family	Magnoliaceae
Genus	<i>Liriodendron</i> L.
Species	<i>Liriodendron tulipifera</i> L.

The deciduous Tulip Tree, native to eastern North America, can grow 60-90 feet tall, with a 30-50 foot spread.

The tree grows in full sun to part shade and best in organically rich, moist, but well-drained soil, preferably loams.

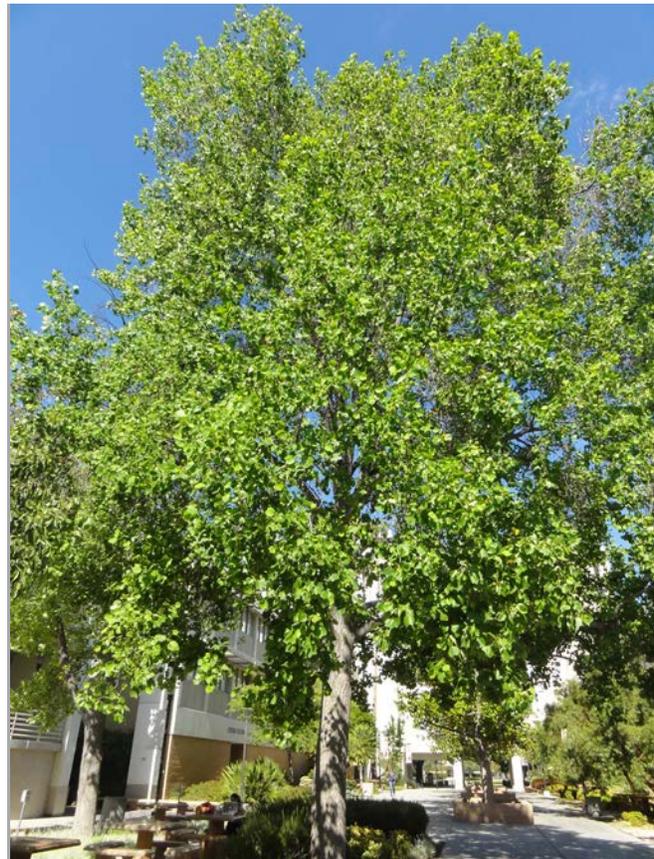
It has a pyramidal to broad conical shape and is a very popular shade tree with showy flowers. Trunks of mature trees can reach up to 6 feet in diameter.

The bark is brown and furrowed and the branches have leaf scars. The leaves are bright-green, simple and alternate, 4-lobed and up to 8 inches across, turning yellow in fall.

The monoecious tree is named for its cup-shaped, tulip-like flowers which bloom in spring. They are yellow in color with an orange base at each petal and 2 inches in length. They sometimes go unnoticed on large trees because they bloom after the leaves are fully developed.

The flowers are followed by scaly, cone-shaped, brown fruit, bearing numerous winged seeds.

This tall, straight-trunked tree with its fragrant flowers is a favorite with wildlife, attracting hummingbirds, birds and squirrels, and acts as a host plant for tiger and spicebush swallowtail butterflies. It is a popular landscape tree in parks and urban areas.



14. X *Chitalpa tashkentensis*: 'Morning Cloud'



Kingdom	Plantae
Class	Magnoliopsida
Order	Lamiales
Family	Bignoniaceae
Genus	<i>Chitalpa</i>
Species	<i>X Chitalpa tashkentensis</i> Elias and Wisura

The 'Morning Cloud' is a rapidly growing deciduous tree, that can reach 20-35 feet in height with equal spread, and has a dense, oval crown.

This popular shade tree is drought-tolerant, grows in full sun to part shade, and can also tolerate poorly drained soils.

It is an inter-generic hybrid cross between the Desert Willow (*Chilopsis linearis*) and Southern Catalpa (*Catalpa bignonioides*) and was first hybridized in Tashkent (Uzbekistan) in the 1960s and brought to the United States in 1977. There are two cultivars: 'Pink Dawn' with pink flowers, and 'Morning Cloud' with white and pale pink blooms.

Its leaves (up to 6 inches long) are lanceolate and taper at both ends, with a dull green color above, and fuzzy texture underneath.

The bell-shaped pale-pink to white flowers, with pale-yellow throats, bloom in upright racemes at the bottom of the branch in summer.

The flowers are sterile, and therefore do not produce the messy seedpods that the parent trees develop.

The flowers attract hummingbirds, bees and butterflies, and the open-limb structure allows filtered light to get through for plants to grow underneath.





15. *Fraxinus velutina*: Arizona Ash

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Oleaceae
Genus	<i>Fraxinus</i> L.
Species	<i>Fraxinus velutina</i> Torr.

The deciduous Arizona Ash is a medium to large tree which can grow 30-50 feet tall, with a 20-30 foot spread.

The Arizona Ash is native to the southwestern United States and Mexico, and is naturally found in riparian areas. It grows best in canyons with a perennial source of water, prefers full sun, and well-drained, uniform soils.

The fast-growing tree with its spreading branches and round crown is short-lived, hardy in alkaline soils, and in desert areas their presence indicates permanent underground water supply.

Its leaves are pinnately compound, lanceolate, with 3-5 leaflets per leaf of $\frac{3}{4}$ -2 $\frac{1}{2}$ inches in length. They are glossy green above and softer and velvety below. In fall the tree turns into an attractive yellow color.

The ash tree is dioecious, and the flowers are inconspicuous, followed by clusters of winged seeds, similar to single maple seeds, on female plants.

It has a medium gray trunk with a fissured bark. It is a popular shade tree for parks and streets.

Its flowers can be a severe allergen.



16. *Citrus x sinensis*: Sweet Orange



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Rutaceae
Genus	<i>Citrus</i> L.
Species	<i>Citrus x sinensis</i> (L.) Osbeck (pro sp.) [<i>maxima</i> x <i>reticulata</i>]

The Sweet Orange is native to Vietnam, northwest India and southern China, but is cultivated in tropical and sub-tropical areas throughout the world.

It grows in full sun for maximum production, but can tolerate filtered light as well, and is drought-tolerant. However, fruit production will suffer under prolonged dry periods.

The trees grow in a variety of soils, from very acidic to very alkaline, in both clay and loam, as long as it is not saturated.

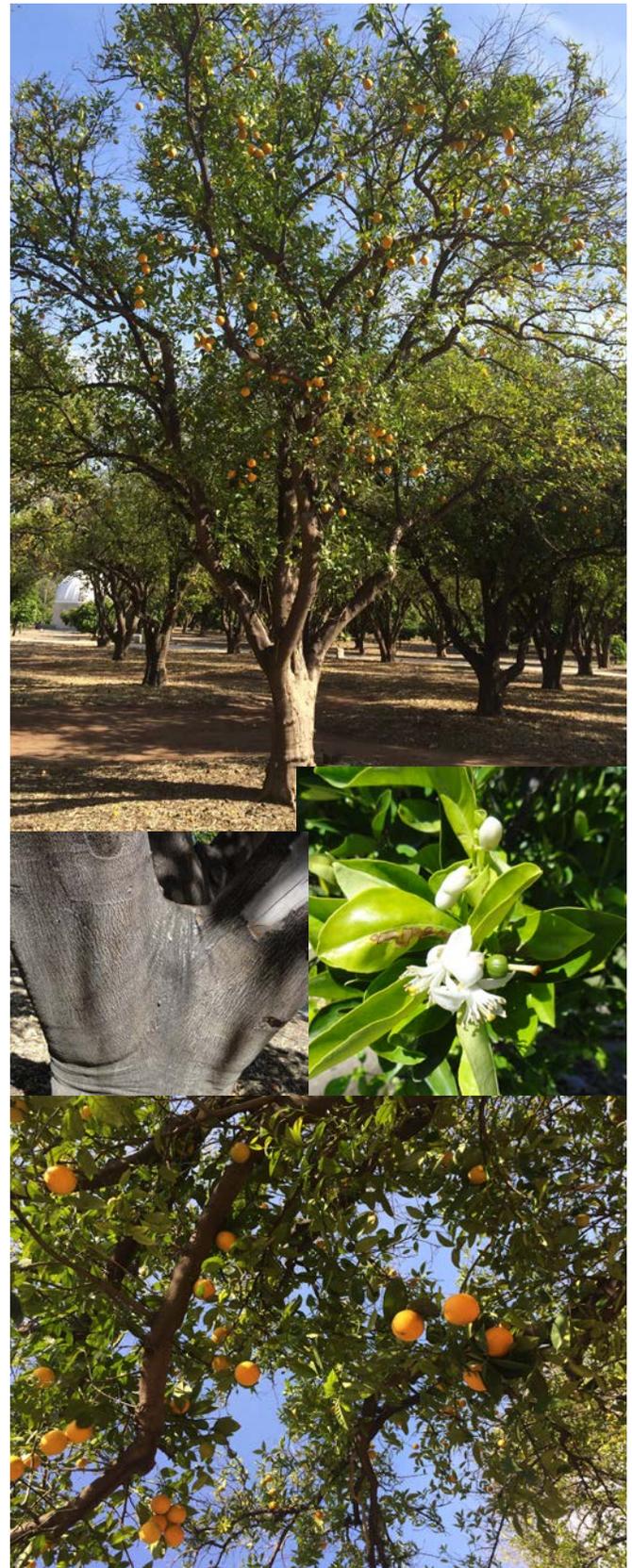
The evergreen Sweet Orange grows 20-30 feet tall, with a 15-20 foot spread, featuring a round, symmetrical crown. Its shiny, dark green leaves are oblong to elliptic, have narrow wings on their petioles, and are up to 4 inches long. Twigs are often thorny.

The white, hermaphrodite flowers, which bloom in spring, are very fragrant and arranged in clusters of 1-6. The flowers are followed by oranges in fall or winter.

The cultivar 'Valencia' is a thin-skinned juice orange grown commercially in California and Florida, and 'Washington,' the original "navel" orange, is grown for the fresh fruit market in California.

The orange blossom is Florida's state flower, and honeybees love the nectar. The caterpillar of the giant swallowtail butterfly relies solely on citrus plants for food. The orange color is brought on by cooler temperatures, and the fruit does not continue to ripen after picking.

Edible parts of the plant include the flowers, the fruit and its oil, and are all high in vitamin C.





17. *Cedrus deodara*: Deodar Cedar

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	<i>Cedrus</i> Trew
Species	<i>Cedrus deodara</i> (Roxb.) G. Don f.

The Deodar Cedar is native to India and Pakistan and can be found in deep, well-drained soils in elevations ranging from 3,500-10,000 feet.

The evergreen tree can grow up to 200 feet in their native habitat, but in cultivation they usually remain under 50 feet. It prefers full sun, neutral to alkaline soils, high atmospheric moisture, and once established, the tree is drought-tolerant.

The tree has a gray-brown bark that starts out smooth, but develops short furrows with scaly ridge tops when it matures. Young trees have a pyramidal crown which broadens with age. Some specimens are said to be up to 900 years old.

The fine-textured needles are dark-green with silvery bottoms, giving the tree an overall blue-green appearance. They are 1-2 inches long and sharply pointed on spur shoots occurring on slender, drooping twigs. The needles remain on the tree for 3-6 years.

The tree is monoecious, with male cones (2-3 inches long) on the lower part of the crown. Upright female cones (3-4 inches long) start out green and then turn a reddish-brown when they mature, are usually resinous, and grow on the upper portions.

The Deodar Cedar was an important timber tree in India, though today it is mostly logged out in much of its former range. It is the most popular landscaping cedar in North America.



18. *Phoenix reclinata*: Senegal Date Palm



Kingdom	Plantae
Division	Tracheophyta
Class	Magnoliopsida
Order	Arecales
Family	Arecaceae
Genus	<i>Phoenix</i> L.
Species	<i>Phoenix reclinata</i> Jacq

This flowering palm is native to the semi-arid plains of Senegal, Africa, Madagascar and the Comoro Islands.

It grows in full sun to part shade, in well-drained clay, loam and sand soils, and is moderately drought-tolerant.

It grows in clumps composed of multiple stems reaching up to 50 feet in height. The stems, covered in brown fiber, curve away from the center in graceful arcs, and are topped with yellow-green to dark-green pinnate fronds, up to 15 feet long and 3 feet wide. The leaf stem is armored with needles near the trunk.

The palm is dioecious. The showy flowers are followed by small bright orange dates, which are very attractive and edible, but are mostly seed.

This striking palm is very popular for urban landscaping and parks.

The roots of the tree contain tannins which are used to make brown dye, and the fibers of its unopened leaves are used to make carpets and brooms.

This perennial tree is considered an invasive plant species in Florida.





19. *Melaleuca quinquenervia*: Punktree

Also called Paperbark Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Myrtaceae
Genus	<i>Melaleuca</i> L.
Species	<i>Melaleuca quinquenervia</i> (Cav.) S.F.Blake

The Punktree, native to Australia, New Guinea, and New Caledonia, is a hardy, upright evergreen tree with low water requirements.

It prefers light soils, but tolerates alkaline, saline, even boggy conditions, wind, heat, drought and smog. It tends to grow rapidly, making it a popular landscaping tree and is useful for soil stabilization.

It has multiple trunks and grows up to 40 feet tall with narrow blade-like, dull-green leaves, which are 3 inches long. It has a very distinct, thick papery bark of tan to white color.

Off-white flowers grow on a spike with the oldest flowers originating closest to the main part of the tree. Newer flowers form as the spike elongates. The flowers occur in summer to fall.

It prolifically produces seedpods, which can store seeds for several years. Seed dispersal is anemochorous.

Although the punktree has become a harmful invader in Florida, fortunately, there are no reports of it developing into an invasive species in other parts of the United States, such as California and Texas, where it is often planted as an ornamental shade tree.



20. *Geijera parviflora*: Australian Willow



Kingdom	Plantae
Class	Magnoliopsida
Order	Sapindales
Family	Rutaceae
Genus	<i>Geijera</i>
Species	<i>Geijera parviflora</i> Lindl.

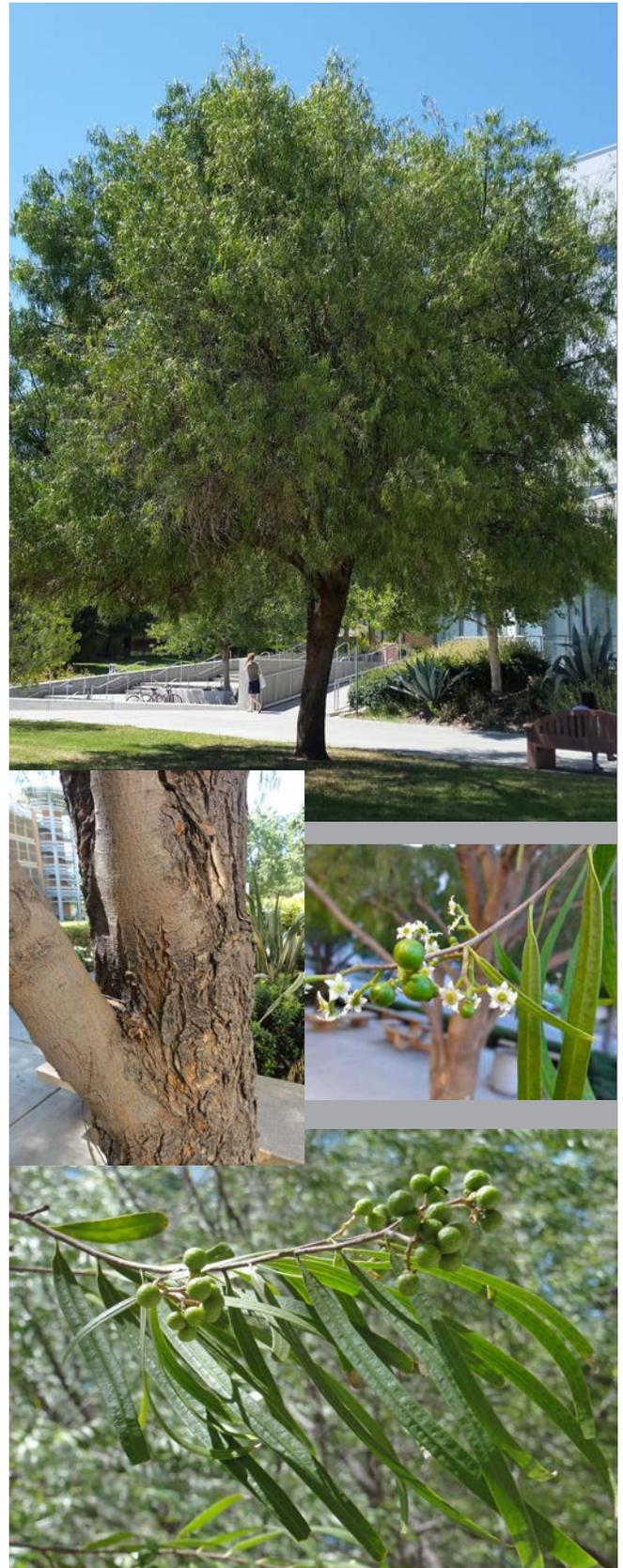
The Australian willow, native to that country, is a fast-growing evergreen tree that can grow up to 35 feet in height and 20 feet in width.

The willow has a deep root system, which enables it to withstand drought. Its average water requirements are low and it can tolerate a variety of soils, from sandy to clay, and prefers full sun.

The inner branches are strong, wind-resistant, and directed upwards, whereas the outer branches are pendulous. It has long, pale green, lanceolate, fine-textured leaves hanging from the branches in alternate arrangements. They grow 2-4 inches long. Combined, these give the tree a weeping effect.

In early spring and fall, clusters of small pale-yellow flowers are noticeable, which turn into round, green fruit, to which wildlife is not attracted.

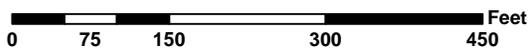
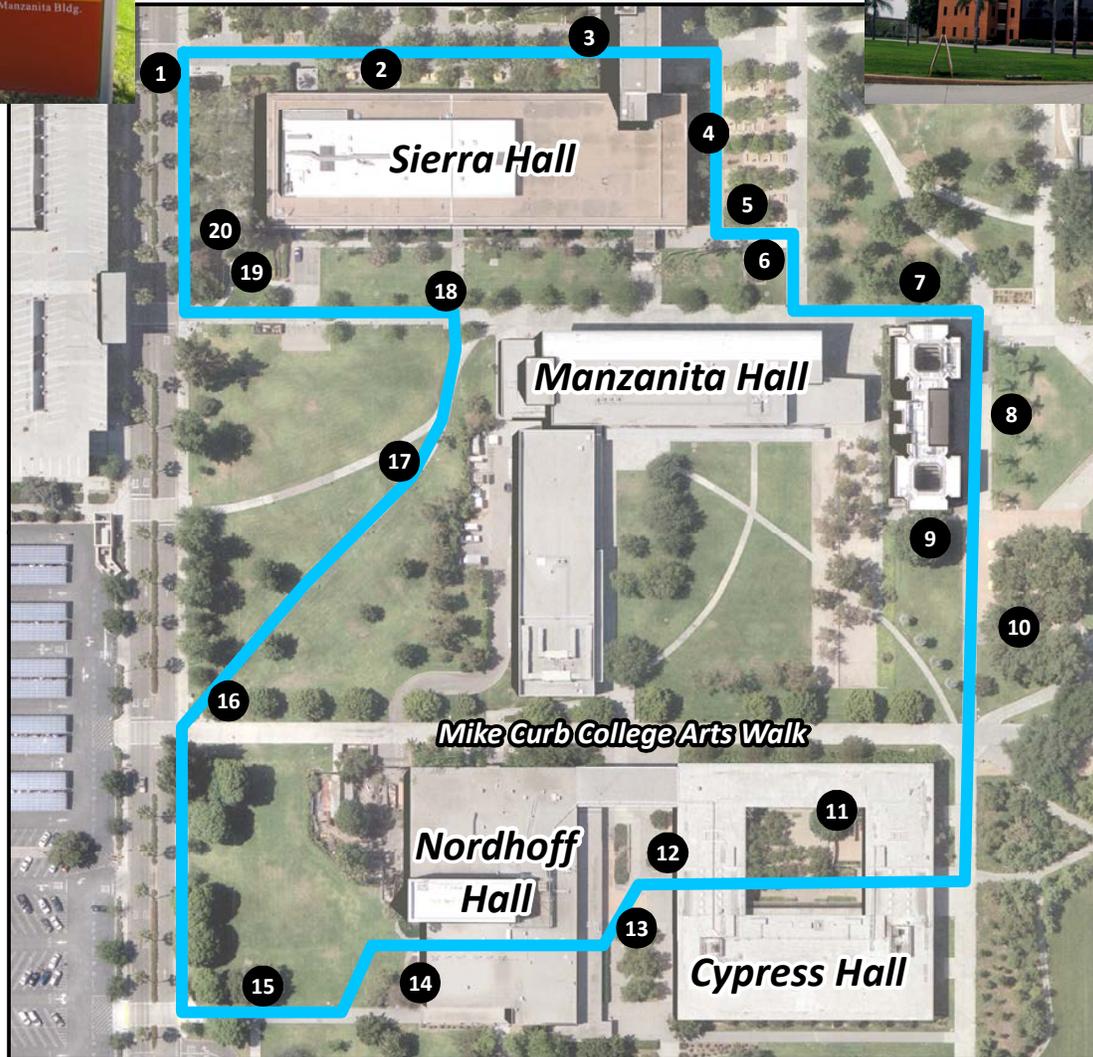
The willow is tolerant of urban conditions and is used as a street tree. However, on sites without good drainage root rot can be a problem.



Walk 3: Southwestern Corner Courtyards

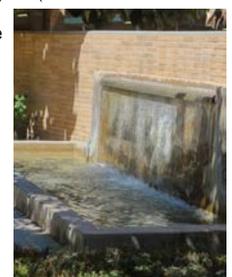


This walk starts and ends by the B3 parking structure and takes you through some charming courtyards. The walk also passes by Santa Susana hall, home to the Institute for Sustainability. Feel free to stop by and get more information about what we do! This walk is a little over half a mile long (0.69 mi).



Walk 3 Tree Species

- 1. *Washingtonia robusta*, Mexican fan palm
- 2. *Rhus lancea*, African sumac
- 3. *Magnolia grandiflora* 'Majestic Beauty', southern magnolia
- 4. *Arbutus unedo*, strawberry tree
- 5. *Cupaniopsis anacardioides*, carrotwood
- 6. *Chamaerops humilis*, Mediterranean or European fan palm
- 7. *Chorisia speciosa*, silk-floss tree
- 8. *Syagrus romanzoffianum*, queen palm
- 9. *Podocarpus gracilior*, fern pine
- 10. *Platanus occidentalis*, American sycamore
- 11. *Ficus auriculata*, Roxburg or elephant ear fig
- 12. *Lagerstroemia indica* 'White', white crape myrtle
- 13. *Brachychiton populneum*, bottle tree
- 14. *Bauhinia variegata*, purple orchid tree
- 15. *Olea europaea*, olive tree
- 16. *Koelreuteria bipinnata*, Chinese flame tree
- 17. *Alnus rhombifolia*, white alder
- 18. *Tabebuia rosea*, pink trumpet tree
- 19. *Laurus nobilis*, sweet bay
- 20. *Eucalyptus sideroxylon* 'Rosea', red ironbark





1. *Washingtonia robusta*: Mexican Fan Palm

Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Arecales
Family	Arecaceae / Palmae
Genus	<i>Washingtonia</i> H. Wendl.
Species	<i>Washingtonia robusta</i> H. Wendl.

This Palm, native to northwest Mexico (Sonora and Baja California), prefers dry, well-drained soils, and full sun.

It is a large, fast-growing tree with a smooth, narrow trunk, and a rounded crown with leaf bases near it. Older leaves that persist form a skirt.

It can grow 75-100 feet high, with a frond spread of 10-12 feet, yet the trunk diameter is only 12-14 inches, and thus the palm sways in the wind.

The palmate leaves are bright green, 3-4 feet wide, and divided halfway to the base. The 3 foot long petiole is reddish-brown and armed with prominent yellow-green spikes.

It blooms in early summer, with stalks of white to cream-colored flowers.

Often planted along narrow roadways, the Mexican fan palm is a popular ornamental tree that is rated as a moderate threat by the California Invasive Plant Council (2014).



2. *Rhus lancea*: African Sumac



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Anacardiaceae
Genus	<i>Rhus</i> L.
Species	<i>Rhus lancea</i> L. f.

The African Sumac, native to South Africa and Namibia, is a small evergreen tree.

It grows from 15-30 feet in height with equal spread and prefers well-drained soils.

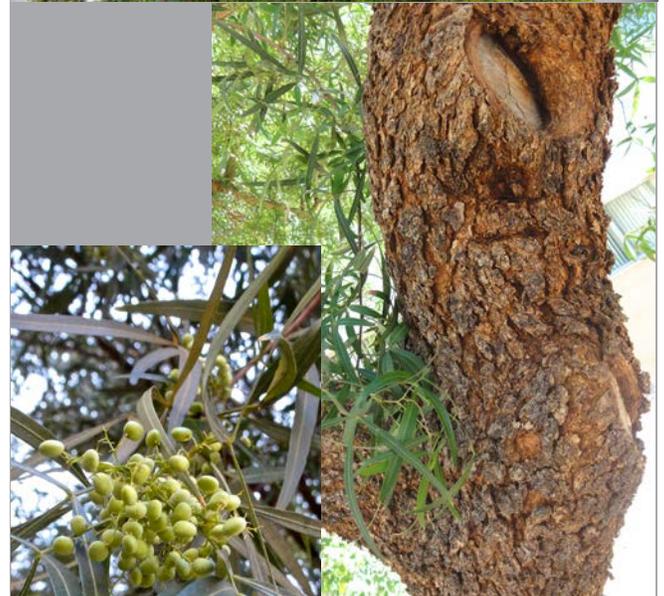
The tree grows best in full sun and heat, is very drought-resistant once established, and accepts strong winds.

It produces medium to dark-green, compound leaves divided into three long leaflets (2-3 inches long), which hang loosely from the branches.

The bark is rough and gray with red-brown fissures.

It has monoecious, small inconspicuous white-green flowers, followed by yellow-green berrylike fruit on the female plant.

It is a durable and fast-growing tree that requires very little maintenance and is very popular as an ornamental and shade tree.





3. *Magnolia grandiflora*: Southern Magnolia

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Magnoliales
Family	Magnoliaceae
Genus	<i>Magnolia</i> L.
Species	<i>Magnolia grandiflora</i> L.

The Southern Magnolia is native to southern North America, where it can be found in moist, fertile soils along streams and near swamp margins. It is, however, drought tolerant, but does best in well-drained, rich, acidic soils.

The tree grows in full sun to partial shade and can tolerate high moisture. It can grow 40-80 feet tall and has a dense, conical shape.

The large broad-leaved evergreen tree typically has a straight trunk (2-3 feet in diameter).

The leathery leaves (5-10 inches long) are dark-green and glossy, simple and alternate, with felt-like fuzz on the underside.

The showy, fragrant, creamy-white flowers (8-12 inches) bloom in summer to early fall.

The fruits are brown and cone-like (2-4 inches long), with bright red kidney-shaped seeds, suspended on slender threads.

Old leaves take a long time to decompose, so not much will grow underneath the magnolias. It is one of the South's most popular landscape trees.



4. *Arbutus unedo*: Strawberry Tree



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Ericales
Family	Ericaceae
Genus	<i>Arbutus</i> L.
Species	<i>Arbutus unedo</i> L.

The Strawberry Tree is native to Ireland, Southern Europe and the western Mediterranean region and is a popular ornamental in Southern California.

It is drought-tolerant once established, as well as salt tolerant, and it propagates by seed (Floridata, 2012).

The tree grows in full sun to part shade and tolerates a variety of soils including clay, loam and sand, as long as they are well-drained.

This evergreen shrub to small tree is often multi-stemmed with a round, dense shape, and can grow 20-25 feet tall, with an 8-15 foot spread.

Its bark is dark red-brown in color and has a flaking texture. The simple leaves are oblong in shape, 2-4 inches long, with toothed margins, dark green in color and leathery with red stems.

The white to pink flowers appear in fall and winter in 2-inch long panicles, followed by round, 1 inch diameter, yellow-red, showy fruit, which is edible, and popular with birds.

The fruit takes one year to ripen; the tree thus carries both mature fruit and flowers at the same time, which gives it a stunning appearance.

There is a slight resemblance to strawberries in appearance, but not in taste. The name *unedo* comes from the Latin "I eat one," since the fruit is not considered very tasty due to its gritty skin.

It is used to make jams, beverages and liquors, such as the Portugese Medronho.





5. *Cupaniopsis anacardioides*: Carrotwood

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Sapindaceae
Genus	<i>Cupaniopsis</i> Radlk
Species	<i>Cupaniopsis anacardioides</i> (A. Rich.) Radlk.

The Carrotwood originates from Eastern and northern Australia, Irian Jaya (Indonesia) and Papua New Guinea.

It is a popular shade tree, which requires full sun, is drought tolerant, though it has no trouble with wet soils, and can grow in a variety of different soil types.

Carrotwood is a fast-growing evergreen tree, which can reach 30 feet in height, with unisexual flowers and large, compound, and undulating leaves composed of four to ten leaflets.

The shiny green, leathery leaflets are pinnate, oblong and can grow up to 4 inches long and 2 inches wide, with rounded or slightly indented tips.

During mid-summer, the numerous white-greenish yellow flowers grow in branched clusters up to 14 inches long, followed by short-stalked woody capsules of fruit with three distinct ridged segments. They turn orange when ripe, then brown and split open to expose three shiny oval seeds covered in red.

The fruits are dispersed widely by birds, creating island populations of this invasive species. It poses a serious threat to Florida's coastal ecosystems and is considered a noxious weed. However, this species does not appear to be a serious threat in California due to the drier climate.



6. *Chamaerops humilis*: European Fan Palm



Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Arecales
Family	Areaceae / Palmae
Genus	<i>Chamaerops</i> L.
Species	<i>Chamaerops humilis</i> L.

The European Fan Palm originates from the western Mediterranean to Southwest Europe and Northwest Africa.

The plant is a slow-growing palm, which, depending on conditions, can reach anywhere from 3-20 feet in height, though at times has been observed to reach up to 30 feet. It requires well-drained soils and can grow in full sun to full shade. Its water requirements are average to low, and it is drought-tolerant. However, since it naturally grows within close proximity to the coast, salty conditions are tolerated.

The petiole is covered with sharp spiny serrations that point toward the leaf blade. They are a clumping species, with green 12-22 inch wide leaves, each divided into narrow segments. The bole is covered with the upward-pointed bases of dead leaves and bears stiff, dark fibers. The fan-shaped, corrugated leaves are split near the base into 12-15 acute segments, which can grow to 20 inches.

Small, yellow flowers emerge in clusters from April to June, and are followed by yellow/brown fruits, which can grow up to 1.5 inches. The fruit is edible, sweet, and tasty.

The European Fan Palm contains a strong fiber from its leaves that is often used as coddage and brushes as well as weaving. It is cultivated in many temperate regions around the world and is commonly grown for landscaping for its aesthetic aspects.





7. *Chorisia speciosa*: Silk Floss Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Malvales
Family	Bombacaceae
Genus	<i>Chorisia</i> Kunth
Species	<i>Chorisia speciosa</i> A. St.-Hil.

The Silk Floss Tree is native to tropical and subtropical regions of South America, including Peru, Bolivia, Paraguay, Uruguay, northern Argentina, and southern Brazil.

It prefers full sun, tolerates a variety of soils, but needs good drainage. It is drought tolerant, with hundreds of thick spines on its trunk and branches that store water for dry periods.

The bark of young trees is a deep green due to chlorophyll, enabling the tree to photosynthesize even when leaves are absent.

The Silk Floss Tree has been introduced to North America as an ornamental, where it produces bright pink flowers over the summer months.

This fast-growing deciduous tree reaches 35-50 feet in height and 40-50 feet in width. Its alternate leaves are palmately compound with serrate margins.

Monarch butterflies are fond of the nectar and act as pollinators for the Silk Floss Tree.

The fruits are large (8 inch long), oblong pods, containing black seeds enclosed in a fluffy material resembling cotton or silk, thus giving the tree its name.

The material from the pods has been used as stuffing, for packaging, and as wood pulp for paper. Due to its outstanding show of color this is a very popular ornamental tree.



8. *Syagrus romanzoffiana*: Queen Palm



Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Arecales
Family	Areaceae / Palmae
Genus	<i>Syagrus</i> Mart.
Species	<i>Syagrus romanzoffiana</i> (Cham.) Glassman

The Queen Palm, native to South America (Argentina, Brazil, Bolivia), is a hardy, single-trunk vertical evergreen tree, which grows at a moderate rate up to 50 feet tall.

This is the most tropical of desert palms, which does not like high winds due to its shallow root system, and also cannot tolerate cold temperatures. It requires ample watering, and thrives in sun or partly shady areas.

The palm prefers acidic, well-drained sandy soils and is slightly salt tolerant. It is a very popular urban tree used in landscaping.

It has pinnate fibers on its petioles and its leaves are bright green, glossy, arching, 10-50 inches long, feather-type fronds.

Flowers are white to cream, and turn into bright orange oval dates (1 inch long) that ripen in the winter months. They are edible and very popular with birds.

There has been some confusion with the nomenclature – a few decades ago the palm was classified as *cocos plumosa*, then during the late 60s and 70s experts referred to the palm as *arecastrum romanzoffiana*, and now it is called *syagrus romanzoffiana*.





9. *Podocarpus gracilior*: Fern Pine

Kingdom	Plantae
Division	Pinophyta
Class	Pinopsida
Order	Pinales
Family	Podocarpaceae
Genus	<i>Podocarpus</i> Gaussen
Species	<i>Podocarpus gracilior</i> (Pilg.) Gaussen

The Fern Pine, an evergreen native to Eastern Africa, is a popular ornamental tree, which can reach up to 50 feet in height and 30 feet in width.

It likes to grow in part shade to full sun, and prefers moist, well-drained sand, loam or clay soils. The Fern Pine can also be grown in a container, or be trained into a hedge.

It is commonly planted to shade or screen areas along streets and patios. The tree's bright green, narrow, lanceolate leaves (2-4 inches) taper at both ends, are flexible with a fern-like appearance.

Seed cones contain a single $\frac{1}{2}$ to 1 inch diameter seed with a thin fleshy coating, borne on a short peduncle.

It does not tolerate cold weather and grows best in warm climates. After the first year of planting, the tree is drought tolerant and requires little maintenance, and can live over 60 years.



10. *Platanus occidentalis*: American Sycamore



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Hamamelidales
Family	Platanaceae
Genus	<i>Platanus</i> L.
Species	<i>Platanus occidentalis</i> L.

American Sycamores, native to the Eastern United States, are large trees which can be found along streams and rivers. They prefer full to partial sun and rich, moist, deep soils, but are also adaptable to poorer soil conditions.

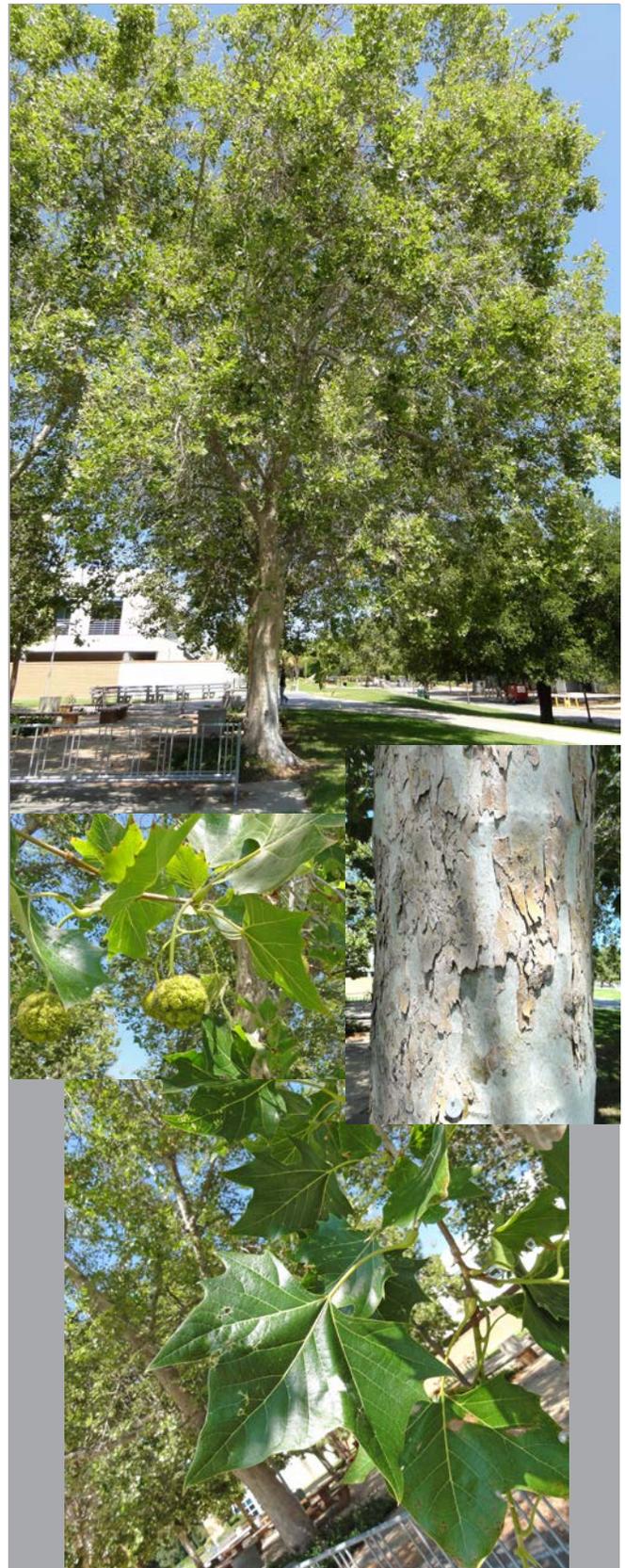
They have very distinct barks, which peel off in large flakes, revealing a multi-colored mottled pattern. The rapidly growing tree can reach up to 80 feet in height and 60 feet in width under urban conditions, and larger even in the wild.

The tree has large palmately lobed leaves and the petiole bases completely enclose the bud.

The alternate, three to five lobed leaves with incised margins are about 6 inches long and resemble large Sugar Maple leaves. They are pubescent on both upper and lower surfaces when young, which contributes to their grayish spring color, but by summer only the lower veins remain so, and by autumn the foliage turns yellow-brown.

Propagation mainly occurs by seed, but also by rooted cuttings. Flowers are monoecious and ornamentally insignificant. The fruits occur on three inch long pendulous peduncles, appearing as “furry” balls, similar to London Plane trees, but where Plane trees have their fruit borne as two per stalk, Sycamores usually only have one.

American Sycamores are used as large shade trees, and are popular due to their ornamental, exfoliating bark. They do particularly well in continuously moist areas. Unlike other plane trees, they are sensitive to pollution.





11. *Ficus auriculata*: Roxburgh or Elephant Ear Fig

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Urticales
Family	Moraceae
Genus	<i>Ficus</i> L.
Species	<i>Ficus auriculata</i> Lour.

Native to India and Southeast Asia, the highly decorative Elephant Ear Fig grows 15-25 feet tall.

In their native habitats the trees usually occur in windbreaks of the forest, in places where birds frequently roost and leave their droppings behind.

The tree prefers full to partial sun and needs moderate watering. Its leaves have a sandpaper-like texture and are very large, broadly oval and about 15 inches across. Young leaves are mahogany red, which turns into a rich green when they reach their full size.

Large pear-shaped figs, more ornamental than edible, grow in clusters on the trunk and on the branches.

Throughout their native distribution from India and Nepal to Southern China, the figs are eaten. In Vietnam the unripe fruit is used in salads. In India, the figs are used in the preparation of jams, juices and curries, and the leaves used as fodder.

In California, the fruit of the evergreen to semi-deciduous tree is dry and pithy and not considered edible.



12. *Lagerstroemia indica* 'White': White Crape Myrtle



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Lythraceae
Genus	<i>Lagerstroemia</i> L.
Species	<i>Lagerstroemia indica</i> L.

The Crape Myrtle, native to China, needs full sun exposure and regular watering (every month). It prefers well-drained, deep, uniform soils.

The tree can grow up to 40 feet and is often multi-stemmed. The attractive, smooth bark exfoliates, exposing multiple colors. The alternate or opposite dark-green leaves are elliptical and 1 ½-2 inches long.

The showy flowers range from white, lavender, pink to purple in color and occur in 8-inch split-like clusters in late summer.

The fruit is a dry, 6-parted, brown capsule roughly ½ inch long, which persists throughout the winter.

The trees can be used for hardwood timber, but are mainly cultivated for aesthetic use especially for their colorful foliage and ornamental appeal.

Although the crape myrtle is native to a region that experiences high humidity during the summer months, the tree can tolerate drought. However, flowering is enhanced when the tree receives water on a weekly basis during drought periods.





13. *Brachychiton populneus*: Bottle Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Malvales
Family	Sterculiaceae
Genus	<i>Brachychiton</i> Schott & Endl.
Species	<i>Brachychiton populneus</i> (Schott & Endl.) R. Br.

The Bottle Tree or “Kurrajong” is native to Eastern Australia from Queensland through New South Wales and inhabits a variety of habitats including mesic coastal areas, as well as drier inland regions.

It prefers full to partial sun, needs good drainage, even texture, and does not perform well in rocky soils. It is drought-tolerant, and many older trees exhibit an extended trunk which serves as a water-storage device.

The Bottle Tree grows from 30-40 feet tall, with a 30 foot spread. It has a rapid growth rate.

The simple, lanceolate leaves are 2-3 inches long, glossy green and have variations in margin type.

Its small, white, bell-shaped flowers with pink dots bloom in early summer, and are followed by a distinctive, brown boat-shaped pod, containing round and fuzzy seeds. The fuzz can be an irritant.

The seeds are dispersed by several species of birds. Due to its drought-hardiness, the Bottle Tree does not require frequent watering. The Aboriginal people of Australia roast and eat the seeds of the Bottle Tree. The leaves are sometimes used as emergency fodder for livestock during times of drought.

It was introduced to California, Louisiana, Arizona, South Africa, and several Mediterranean countries as an ornamental plant.



14. *Bauhinia variegata*: Purple Orchid Tree



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae / Leguminosae
Genus	<i>Bauhinia</i> L.
Species	<i>Bauhinia variegata</i> L.

The tree is native to northern India, Vietnam, and southeastern China. It prefers full sun, but can tolerate light shade. Orchid trees prefer acidic soils and cannot tolerate limey or salty conditions and they need to be watered frequently.

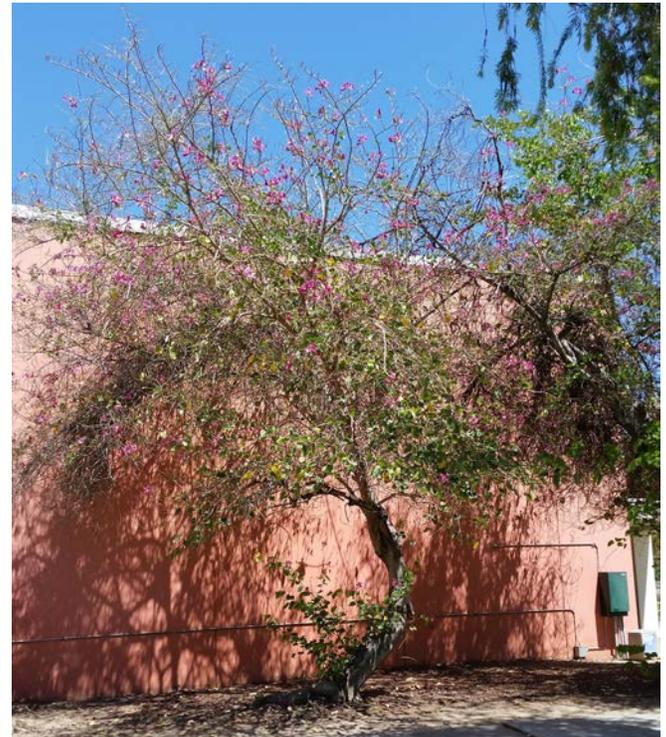
The tree grows 20-40 feet tall, with a 10-20 foot spread. The light-green leaves are 4-6 inches across, rounded with lobed ends which resemble a cow's hoof.

The flowers first appear in winter, when the tree is bare of leaves. These showy, orchid-like flowers are 3-5 inches across and carried in clusters at the branch tips. They have 5 irregular, slightly overlapping petals in colors ranging from magenta and lavender to purple, and are fragrant.

Being a member of the bean family, the flowers are followed by flattened, brown, woody pods up to 12 inches long.

The branches are brittle, so it is not good for locations with high winds.

Young pods, leaves and buds are used as vegetables. Also, the tree yields a gum, the bark can be used for tanning and dyeing, and oil can be obtained from the seeds. This tree is a very popular tree not only for its great beauty, but also for its usefulness.





15. *Olea europaea*: Olive Tree

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Oleaceae
Genus	<i>Olea</i> L.
Species	<i>Olea europaea</i> L.

The Olive Tree, native to the Mediterranean region, only reaches about 25-30 feet in height.

It can grow in a variety of soils: sand, loam and clay, as long as they are well-drained. The tree is drought-tolerant, needs full sun and does not like to grow in the shade.

Young trees have a smooth, gray bark, which becomes gnarly looking with age. The leaves are elliptical to lanceolate in shape, up to 3 inches long, and dark gray-green above and silvery beneath.

Small white, fragrant flowers bloom in spring, followed by edible, glossy, black fruit – olives (1-1 ½ inches long). It is the main source for olive oil in the Mediterranean, which tastes different depending on the growing region.

This evergreen tree is often multi-stemmed and has been in cultivation for millennia. It has great landscape value due to its beautiful character and is a popular shade tree.

It is considered an invasive by the California Invasive Plant Council (2014).



16. *Koelreuteria bipinnata*: Chinese Flame Tree



Also called Bougainvillea Golden-rain Tree

Kingdom	Plantae
Division	Tracheophyta
Class	Magnoliopsida
Order	Sapindales
Family	Sapindaceae
Genus	<i>Koelreuteria</i> Laxm.
Species	<i>Koelreuteria bipinnata</i> Franch.

This tree is native to southern and eastern Asia, and has been turned into a popular landscape addition throughout the world.

It prefers well-drained soils, sand or clay, and only needs moderate watering. Once established, it is a hardy tree which can tolerate wind, air pollution, salt, heat and drought. It prefers sunny locations.

This fast-growing, deciduous, broadleaf tree grows on average to 30 feet in height and 20 feet in width, but can grow up to 60 feet tall. It grows upright with a spreading crown and can be multi-stemmed.

The bipinnately, bright-green compound leaves of ovate shape are roughly 20 inches long.

The tree flowers at an early age and has something to offer during all four seasons, starting off with small, fragrant, yellow flowers in spring (they are hermaphrodites).

The flowers are followed by clusters of papery, pink capsules (similar to Bougainvillea), which turn into a rich salmon in late fall, persisting into winter, turning light tan in color.





17. *Alnus rhombifolia*: White Alder

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fagales
Family	Betulaceae
Genus	<i>Alnus</i> Mill.
Species	<i>Alnus rhombifolia</i> Nutt.

White Alder, native to North America, range from Baja California through Oregon, and as far north as southern British Columbia.

The White Alder is a fast-growing deciduous tree that can reach 50-75 feet in height, with a 30-40 foot spread. It is typically found in forested riparian areas along streams and wet soil canyons. This tree is a reliable indicator of a riparian community, thriving in floodplains.

It tolerates clay, loam and sandy soils, prefers them to be well-drained, and has moderate drought-tolerance. The seeds need moist mineral soil to germinate.

The dark-green glossy, oval leaves are 4 inches long with serrated edges and appear right after springtime's display of 6-inch long yellow catkins, followed by brown, cone-like fruit.

The tree is an important part of the riparian ecosystem. It is a nitrogen-fixer, allowing essential nutrients to be used by other plants. Wildlife utilizes its leaves, seeds and bark as food.

Native Americans used this tree for red dye while the modern use for White Alder is in firewood and saw logs for general timber harvesting.



18. *Tabebuia rosea*: Pink Trumpet Tree



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Bignoniaceae
Genus	<i>Tabebuia</i> Gomes ex DC.
Species	<i>Tabebuia rosea</i> (Bertol.) DC.

The Pink Trumpet tree is native to Central and South America.

It is a mid-sized, fast growing tree that can reach 15-25 feet in height and has a dome-shaped canopy with a 10-15 foot spread.

Mature trees need little watering, and can withstand high winds. It is a low-maintenance deciduous tree, which grows in full sun to partial shade.

The bark is gray and furrowed, the branches irregular, and the foliage is pale-green to silver. The leaves (2-4 inches long) are slender, oval-shaped with serrate margins and an acute base.

The tree produces beautiful hermaphroditic flowers, pink or yellow in color, which bloom in late winter and early spring, and are extremely showy. They are made of five pink petals that are fused at the base in the shape of a funnel.

The flowers are followed by long beanpod shaped fruit 7-13 inches long. Each fruit contains hundreds of seeds that possess a winglike membrane allowing for anemochorous dispersal.

Trumpet Trees are very popular ornamental trees.





19. *Laurus nobilis*: Sweet Bay

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Lurales
Family	Lauraceae
Genus	<i>Laurus</i> L.
Species	<i>Laurus nobilis</i> L.

The Sweet Bay, native to the Mediterranean region of Europe, is a slow-growing, medium-sized evergreen tree, which grows 15-30 feet in height and up to 15 feet wide. It grows best in mild coastal environments.

Once established, it needs little water and will tolerate full sun, but prefers semi-shade. It will grow in lean, rocky soils.

The tree is dioecious. In spring, its yellow-green flowers, which grow in clusters, are inconspicuous, and the small fruit are lustrous black berries of roughly ½-1 inch in diameter.

Its dark green aromatic lanceolate leaves (4 inches long) have long been used as seasoning in cooking (bay leaf), and its essential oils are used as food flavoring and in perfumery.

Poets and scholars in ancient Greece saw the sweet bay tree as a symbol of honor, truth and achievement.



20. *Eucalyptus sideroxylon* 'Rosea': Red Ironbark



Kingdom	Plantae
Class	Magnoliopsida
Order	Myrtales
Family	Myrtaceae
Genus	<i>Eucalyptus</i> L'Hér.
Species	<i>Eucalyptus sideroxylon</i> A.Cunn. ex Woolls

The Red Ironbark, native to Australia (New South Wales and Queensland), is a fast-growing tree which can reach up to 60 feet in height.

The trees will tolerate a wide range of soil conditions, including wet or dry, heavy and alkaline, even sterile soil. They are well suited for warm and dry areas.

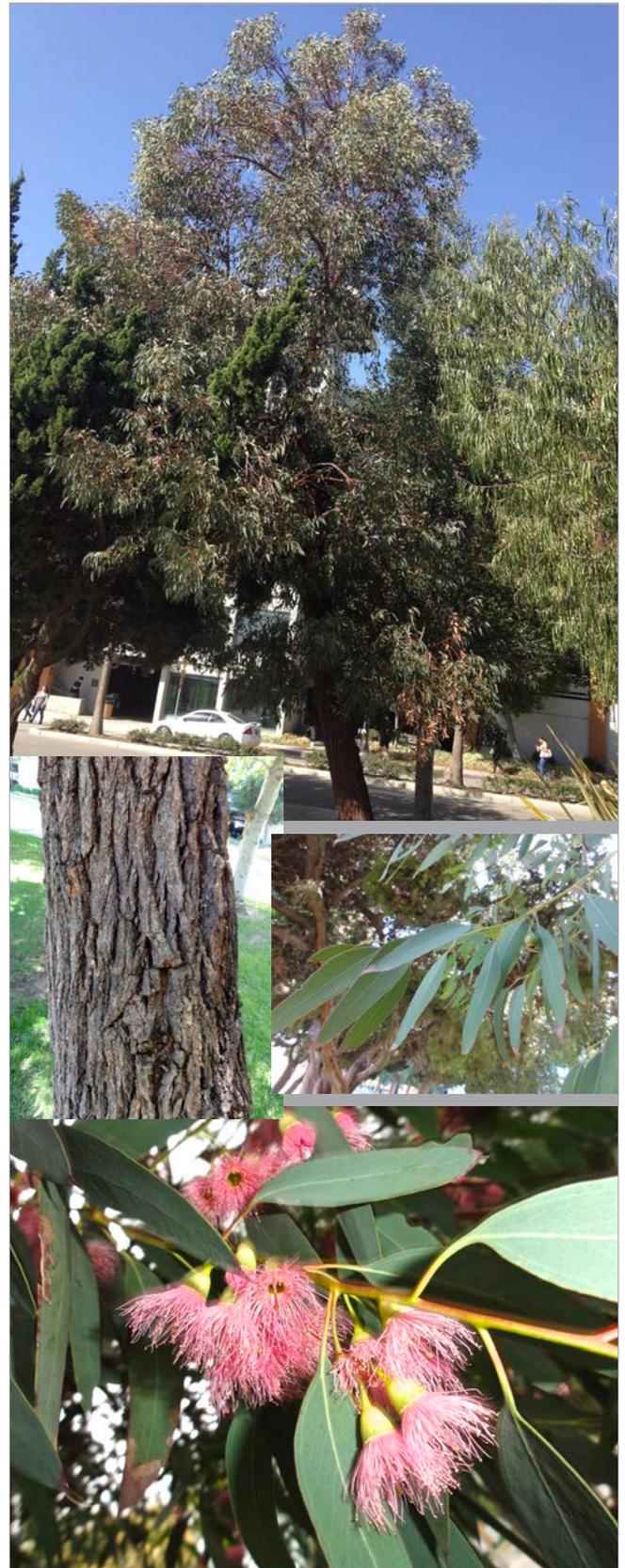
It is a very hardy tree, able to withstand heat, drought and frost, but prefers full sun. It has a deeply furrowed, reddish-black bark that does not shed.

The blue-green lanceolate leaves (4 inches long) are slightly sickle-shaped. The pink-red flowers are borne in fluffy drooping clusters, followed by goblet-shaped 3/8 inch capsules with thin, oblique discs.

It is used for shade, and wind-resistant landscaping and is a popular ornamental due to its perfumed foliage and showy flowers and fruit.

The tree has a very aggressive root system, depleting soils of moisture and nutrients. Its foliage contains oils, which prevent the leaves from decomposing quickly, at times sterilizing the soil.

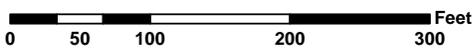
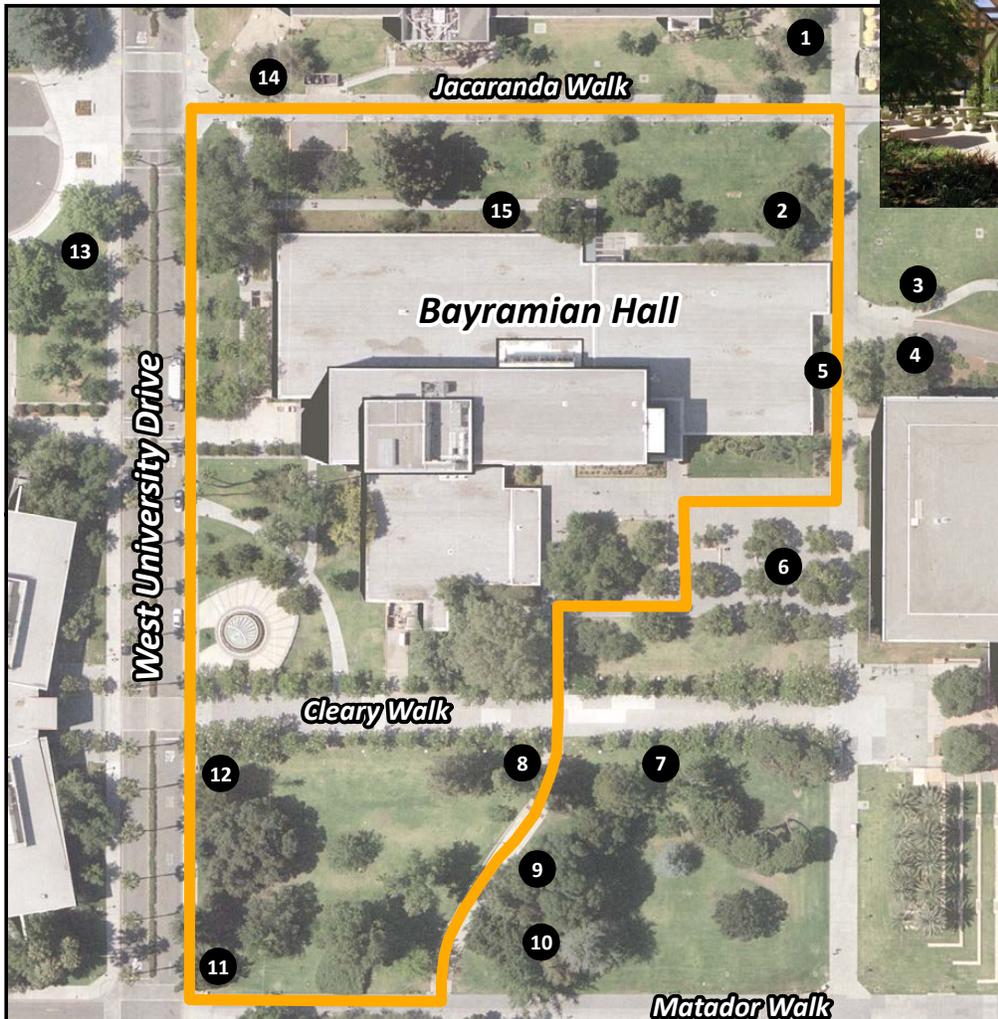
Flowers are produced in winter, when many other trees are dormant, so the pollen can be an important winter food source for honeybees and other insects.



Walk 4: Northwestern Corner Sundial



This walk begins and ends by the Arbor Grill, making a short loop around the west side of campus and bringing you past the lovely Sundial Fountain. The walk is just under half a mile long (0.40 mi).



Walk 4 Tree Species

- 1. *Salix babylonica*, weeping willow
- 2. *Schinus molle*, pepper tree
- 3. *Ceratonia siliqua*, carob or St John's bread
- 4. *Platanus x acerifolia*, London plane tree
- 5. *Trachycarpus fortunei*, windmill palm
- 6. *Pyrus kawakamii*, evergreen pear
- 7. *Araucaria bidwillii*, bunya bunya
- 8. *Pinus canariensis*, Canary Island pine
- 9. *Fraxinus uhdei*, evergreen or shamel ash
- 10. *Ginkgo biloba*, maidenhair tree
- 11. *Juniperus chinensis* 'Torulosa', Hollywood juniper
- 12. *Zelkova serrata*, sawleaf zelkova
- 13. *Cedrus libani*, Lebanon cedar
- 14. *Jacaranda mimosifolia*, jacaranda
- 15. *Callistemon citrinus*, lemon or crimson bottlebrush





1. *Salix babylonica*: Weeping Willow

Kingdom	Plantae
Division	Magnoliophyta
Class	Angiospermae
Order	Malpighiales
Family	Salicaceae
Genus	<i>Salix</i> L.
Species	<i>Salix babylonica</i> L.

A native of China, the Weeping Willow grows best in medium to wet, well-drained soils and prefers full sun.

It is a rapid-growing deciduous tree which can reach 30-50 feet in height with a short trunk and broad rounded crown, but it has a short life-span.

It sports pendulous weeping branches with 3-6 inch alternate, narrow, simple leaves, which are among the first to leaf out in spring and one of the last to drop in fall.

It is dioecious, with male and female non-showy flowers appearing in silvery green catkins on separate male and female trees in April-May.

The tree is very beautiful with its graceful weeping branches, when planted in appropriate locations, such as by ponds, or alongside streams, but is generally not highly recommended in residential landscaping due to its susceptibility to disease, breakage and rapidly spreading roots.

It has a high susceptibility to blights and mildew, and is host to numerous insect pests. It has a very invasive and shallow root system, so it is best to avoid planting it near sewers or water lines.

The epithet *babylonica* in this Chinese species' scientific name (*Salix babylonica*), as well as the related common names "Babylon Willow" or "Babylon Weeping Willow," derive from a misunderstanding by Linnaeus that this willow (*Salix*) was the tree described in the Bible.



2. *Schinus molle*: Pepper Tree



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Anacardiaceae
Genus	<i>Schinus</i> L.
Species	<i>Schinus molle</i> L.

This native to Peru is an evergreen, single or multi-stemmed tree which can grow 30-40 feet in height with equal spread, displaying a moderately weeping form.

This attractive shade tree prefers full sun and is drought-tolerant once established, but thrives in moist, well-drained sandy loam. The roots are far-reaching, deep and intensive. It is considered an invasive by the California Invasive Plant Council (2014).

The gray-colored trunk exfoliates with age, revealing a reddish color underneath. The leaves are pinnately compound and linear with 6-12 inches in length. Leaflets are 2½ inches long.

The small flowers are off-white in color and followed by small, round, reddish seeds with a strong pepper scent.

Also known as California Pepper, this tree is unrelated to true peppercorns, though it is often blended with commercial pepper.

Due to the various parts of this tree's astringent properties, there are numerous medicinal uses, including purgative, diuretic and antiseptic.





3. *Ceratonia siliqua*: Carob Tree

Also called St. John's Bread

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae / Leguminosae
Genus	<i>Ceratonia</i> L.
Species	<i>Ceratonia siliqua</i> L.

The Carob tree, native to the eastern Mediterranean region, with a round to umbrella-like shape, can grow up to 55 feet tall. Its lifespan is over 150 years. The tree is evergreen and dioecious and flowers in spring.

It prefers full sun to partial shade and can tolerate a variety of soils - sandy, loam and clay, from slightly acidic to highly alkaline.

The leaves are pinnately compound and glossy, dark green, and oval in shape. The flowers have an unpleasant fragrance, and are followed by large brown pods in summer and fall. The pods are edible.

The pods are light-to-dark brown in color, oblong, flattened, straight or slightly curved, with a thickened margin, and 4-12 inches long. They are filled with a soft pulp and 10-13 hard seeds, which are loose and rattle when the pod is dry and ripe. The pods are processed into a cocoa-like flour, which is high in fiber, and used as a chocolate substitute.

The seeds yield a tragacanth-like gum, used as a commercial stabilizer and thickener for food products. After gum-extraction they can also be made into a starch-and sugar-free flour for diabetics, with high protein content. The pods are also used to feed livestock.



4. *Platanus x acerifolia*: London Plane Tree



Kingdom	Plantae
Division	Tracheophyta
Class	Magnoliopsida
Order	Proteales
Family	Platanaceae
Genus	<i>Platanus</i> L.
Species	<i>Platanus x acerifolia</i> (Aiton) Willd.

The London Plane tree can grow 75-100 feet tall, with a 60-75 foot spread, typically growing as a single-trunk tree, with horizontal branching and a rounded look.

It prefers to grow in full sun to partial shade, in moist well-drained soils that are nutrient-rich, but it is also tolerant of a variety of soil conditions, including compacted soils with restricted root space.

It is a hybrid between the American Sycamore (*P. occidentalis*) and the Oriental Plane tree (*P. orientalis*). The cross may have occurred in the 17th century, after which the tree became widely planted in London and other European cities due to its perceived tolerance for urban pollution.

The tree is often hard to distinguish from its American parent, but leaves have deeper sinuses and the fruiting balls appear in pairs. Its signature ornamental feature is the bark, brown in color, but exfoliates in irregular pieces to reveal a cream-colored inner bark, making it appear mottled.

Its leaves are medium to dark-green, lobed and 4-9 inches wide, with coarse marginal teeth. In fall, the leaves turn yellow-brown in color. In spring small, insignificant, monoecious flowers appear, the male flowers are yellow, the female reddish. The latter turn into fuzzy, long-stalked, round fruiting balls, appearing in pairs, and consisting of densely-packed, tiny seed-like fruit. In fall, they disintegrate, dispersing their seeds in downy tufts.

This tree is indeed tolerant of urban conditions, including air pollution, but it is susceptible to powdery mildew.





5. *Trachycarpus fortunei*: Windmill Palm

Kingdom	Plantae
Class	Magnoliopsida
Subclass	Arecidae
Order	Arecales
Family	Palmae
Genus	<i>Trachycarpus</i>
Species	<i>Trachycarpus fortunei</i> (Hook.) H.Wendl.

The Windmill Palm, one of the most cold-hardy palms, is native to temperate and subtropical areas of Asia, particularly southeastern China and Taiwan.

The palm prefers growing in partial shade, well-drained, nutrient-rich soils, but can grow in a variety of conditions, except when the soil is saturated. The palm is drought-tolerant, but growth will be stunted.

It grows 20-40 feet tall, with a single, slender trunk of 8-10 inches in diameter, which is wider at the top than at the base. The symmetrical crown is about 8-10 feet wide.

The trunk is covered with loose mats of gray or brown fibers, which can slough away in older trees, exposing a smooth, ringed surface.

The circular, 3 feet in diameter palmate leaves are light to dark-green above and silvery below. They are segmented about halfway and held on thin, toothed, flattened stems, which are generally about 3 feet long.

Male and female flowers are borne on separate trees and densely arranged on 2-3 feet long branched stalks called inflorescences. The bright yellow flowers erupt from packet-like buds in early spring and are held within the crown. On female plants, round, oblong, bluish fruits ($\frac{1}{2}$ inch) follow in summer, and they do not attract wildlife.

It is a popular landscape addition for smaller spaces, such as courtyards and entries.



6. *Pyrus kawakamii*: Evergreen Pear



Kingdom	Plantae
Class	Spermatopsida
Order	Rosales
Family	Rosaceae
Genus	<i>Pyrus</i> L.
Species	<i>Pyrus kawakamii</i> Hayata

The Evergreen Pear, native to China and Taiwan, is a small tree which produces small white flowers in late winter and/or early spring.

The tree prefers deep, well-drained sandy or loamy soils.

This popular flowering tree is fast-growing; it can reach 15-30 feet in both height and width, and needs regular watering, especially in high heat.

The evergreen pear produces glossy-green oval shaped leaves with pointy tips (3 inches long). Despite the tree's name, it may be partly deciduous in very cold winters.

The abundant flowers are made of five petals with multiple stamens originating at the base of the petals. It has two pistils.

The flowers have a pungent smell that attracts birds, bees and butterflies, and is usually the first tree to bloom each year.

After flowering, it produces a pea-sized brown fruit which is not edible. In late December to January the foliage turns red.





7. *Araucaria bidwillii*: Bunya Pine

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Araucariaceae
Genus	<i>Araucaria</i> Juss.
Species	<i>Araucaria bidwillii</i> Hook.

The evergreen Bunya Pine, native to coastal southeast Queensland, Australia, is a very symmetrical cone-shaped tree when young. When the trees get larger than 20-50 feet, they lose their lower branches and develop dome-shaped crowns. They can grow up to 120 feet tall. Bunya Pine trees are the only case of hereditary, personal property owned by the Australian Aborigines

The tree prefers full sun to partial shade, and requires regular watering. It tolerates a variety of soils (sand, loam and clay), as long as they are well-drained, but prefers rich, volcanic soils.

There are two types of leaves: The stiff, sharp-pointed young leaves are narrow and glossy (1-2 inches long), spreading and arranged in two rows on the branchlets. The mature leaves are oval and woody ($\frac{1}{2}$ in.), twisted, spirally arranged and overlapping on the branchlets.

The blooms, which appear in June, are inconspicuous. The tree is dioecious, and when mature, female Bunya Pines produce big, spiny, pineapple-shaped cones up to 9 inches long, 8 inches in diameter, which can weigh up to 18 pounds, every few years. The trees begin to bear cones at about 14 years of age, and their bark is deeply furrowed. The edible seeds are considered a delicacy by Australian Aborigines.

With their distinctive silhouette, they are a popular shade tree for large landscapes.



8. *Pinus canariensis*: Canary Island Pine



Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	<i>Pinus</i> L.
Species	<i>Pinus canariensis</i> C. Sm.

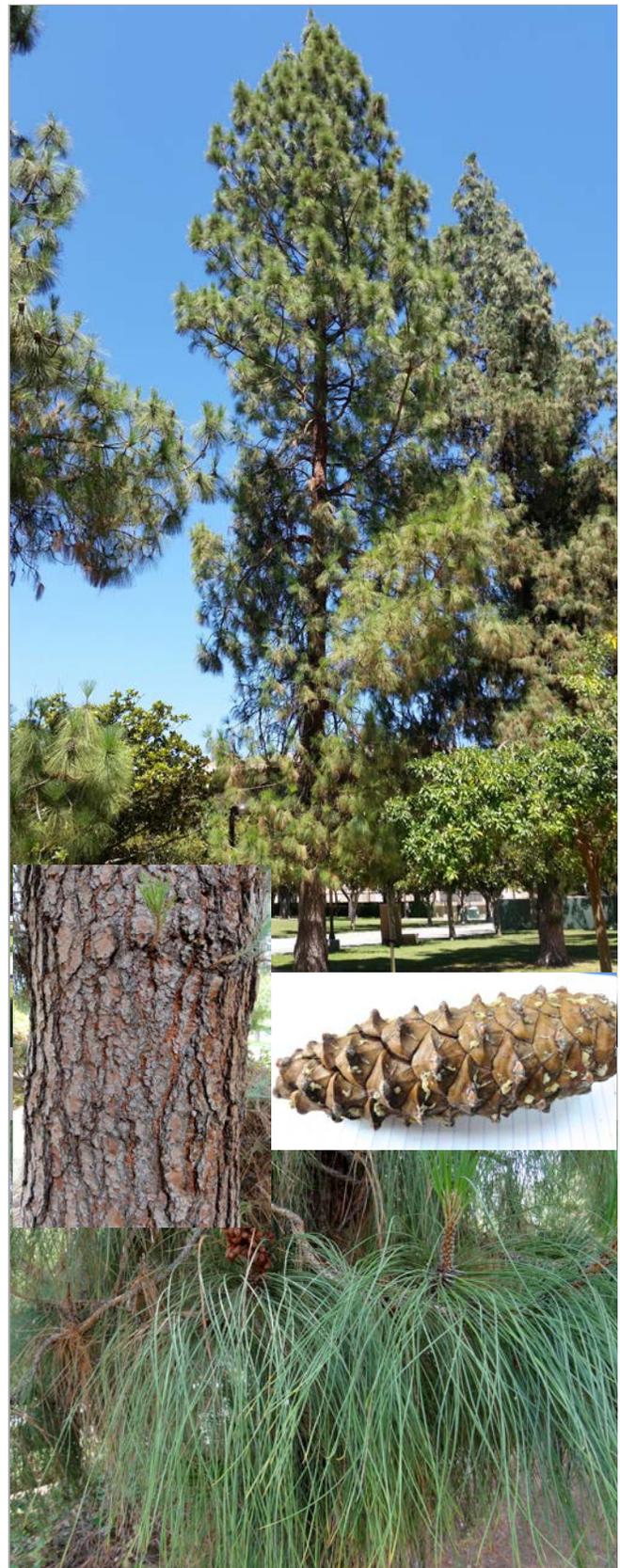
The Canary Island Pine, native to the Canary Islands, is a narrow, columnar tree, 50-80 feet tall and up to 30 feet wide, with a distinctive branching structure.

This is a fast-growing tree, well adapted for urban environments, tolerating smog and dust. It is drought-tolerant, prefers well-drained sandy soils, full sun, and is pest free, which makes it a very popular vertical accent landscape tree.

The fine, weeping needles, up to 12 inches long, grow in bundles of three, and are often bluish when young.

The canary pine's characteristic green-gray needles and oval shaped cones make it unique from other pines. Female cones grow 4-9 inches long.

The Canary Island Pine grows faster in California's coastal areas than the native Monterey Pine (*Pinus radiata*).





9. *Fraxinus uhdei*: Evergreen/Shamel Ash

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Oleaceae
Genus	<i>Fraxinus</i> L.
Species	<i>Fraxinus uhdei</i> (Wenzig) Lingelsh.

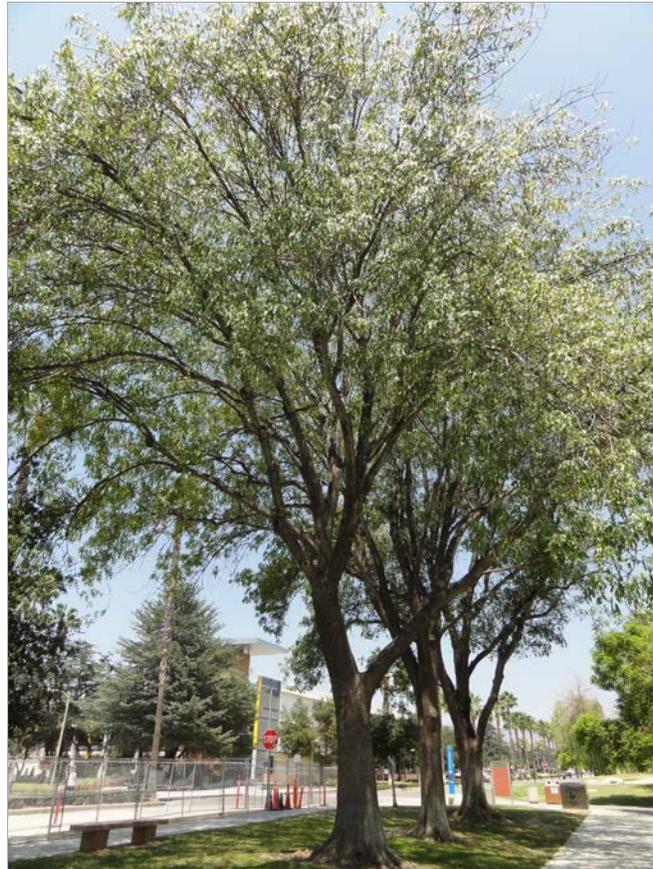
The Shamel Ash, native to Mexico, is an upright, fairly fast-growing tree, which can reach up to 80 feet in height.

It is a semi-evergreen to evergreen tree, whose leaflets may burn if exposed to hot winds. It has shallow roots, enjoys full sun and moist, but well-drained soils. The soil types it tolerates range from sandy loam to some clay.

The pinnate leaves are divided into 5-9 glossy dark green leaflets, which are about 4 inches long, toothed and narrow.

Inconspicuous, petal-less flowers grow in large panicles. The Shamel Ash is dioecious, with male and female flowers growing on separate trees.

Seed production is copious, and it is considered an invasive species in Hawaii, where it was originally introduced as a shade tree. It is considered mildly invasive in California.



10. *Ginkgo biloba*: Maidenhair Tree



Kingdom	Plantae
Division	Ginkgophyta
Class	Ginkgoopsida
Order	Ginkgoales
Family	Ginkgoaceae
Genus	<i>Ginkgo</i> L.
Species	<i>Ginkgo biloba</i> L.

The deciduous Maidenhair tree, native to China, grows 40-70 feet tall, with a 20-40 foot spread. The tree prefers full sun and can tolerate a variety of soils, except for those that are saturated. Male *Ginkgo* trees are popular ornamental trees for landscaping.

Its shape is pyramidal, with irregular horizontal branches. The emerald-green fan-shaped leaves (2-3 inches long) are alternate, simple leaf and grow in clusters of 3-5. In fall, the leaves turn yellow.

Flowers are insignificant, followed by plum-shaped, yellow-orange fruit on the female trees. The outer fleshy pulp is foul-smelling when ripe and the inner wall is hard, smooth and cream-colored. The outer pulp and the seed kernel are poisonous when ingested in large quantities and lead to minor dermatitis after contact with the skin. However, the seed itself, freed from the outer pulp and washed, is boiled or roasted and eaten in Asia.

The *Ginkgo* is one of the oldest living tree species and has a long history of being used in traditional medicine to treat blood disorders and to improve memory. It may even help treat dementia. It contains flavonoids and terpenoids which are plant-based antioxidants. These tough, hardy trees can live up to 1,000 years.

The tree is also referred to as a “living fossil,” largely unchanged in over 200 million years. It is a single species with no living relatives, and with no known dispersers in the contemporary fauna. Its long-term survival is attributed to human cultivation.





11. *Juniperus chinensis* 'Torulosa': Hollywood Juniper

Also called Chinese Juniper

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Cupressaceae
Genus	<i>Juniperus</i> L.
Species	<i>Juniperus chinensis</i> L.

The Hollywood Juniper is an irregular, upright coniferous shrub or tree, which can grow 15-20 feet in height and spread up to 10 feet in width.

It is originally from Asia - China, Mongolia and Japan. It prefers loose, well-drained soils, full sun and infrequent moisture, and shows great tolerance for many soil types, including clay, and acid or alkaline conditions. The tree can also tolerate smoggy and dusty urban conditions and must be watered deeply once a month.

The Hollywood Juniper is a dioecious tree, with male and female reproductive organs on separate trees.

The tree sports dense, dark-green, fragrant, scale-like foliage. It has inconspicuous flowers and small berry-like cones of blue color.

The variety 'torulosa' is the most sought after of all Hollywood Juniper varieties due to its artistically twisted trunk.



12. *Zelkova serrata*: Sawleaf Zelkova



Also called Japanese Zelkova

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Urticales
Family	Ulmaceae
Genus	<i>Zelkova</i> Spach
Species	<i>Zelkova serrata</i> (Thunb.) Makino

The deciduous Sawleaf Zelkova, native to Japan, Taiwan and eastern China, can grow 50-80 feet tall, with equal spread, with a vase-shaped crown and graceful shape.

The tree prefers sun to partial shade and moist, well-drained soils.

The bark is smooth and gray when the tree is young, but will reveal the orange-brown inner bark when it gets older.

The leaves are oblong, elliptic, and medium-green in color, with coarse, ciliate marginal teeth and acuminate tips, turning from yellow, orange, to brown in fall.

In spring, along with the emerging foliage, insignificant, small green flowers appear which are followed by small, non-showy, ovate drupes in fall.

The tree is resistant to Dutch elm disease and therefore is used as a substitute for *Ulmus americana*, American elm.

It is a great shade tree, tolerant of heat, wind and drought, as well as urban conditions.





13. *Cedrus libani*: Lebanon Cedar

Kingdom	Plantae
Division	Coniferophyta
Class	Pinopsida
Order	Pinales
Family	Pinaceae
Genus	<i>Cedrus</i> Trew
Species	<i>Cedrus libani</i> A. Rich. [excluded]

The Lebanon Cedar, originally native to Asia Minor, can be found in Syria, Turkey and Lebanon. However, it has become rare in Lebanon, but has been cultivated throughout the world.

The hardy, slow-growing tree can be found between 4000-7000 feet in elevation. It is one of only three species of cedars in the world: The Deodar Cedar, The Lebanon Cedar and the Mount Atlas Cedar.

This tree prefers deep soils, full sun, and roughly 40 inches of rain per year. The slow-growing, evergreen cedar grows 80 feet tall with a 30-50 foot spread of thick, horizontal branches.

The bark is dark gray in color and fissured, and the branches are very thick and long. The stiff, dark-green needles, appearing on short shoots and grouped in tufts of 30-40, are ½-1½ inches long.

They do not flower until they are 25-30 years old, and both male and female flowers, 2-inch reddish catkins, are on the same tree.

Flowers appear from June to September, followed by erect, brown, resinous cones (3-5 inches long) from August to October, shedding their seeds into spring.

The oldest known tree is over 1000 years old. Historically the species was prized for timber and it also has significant value due to its mythological and scriptural associations.



14. *Jacaranda mimosifolia*: Jacaranda



Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Scrophulariales
Family	Bignoniaceae
Genus	<i>Jacaranda</i> Juss.
Species	<i>Jacaranda mimosifolia</i> D. Don

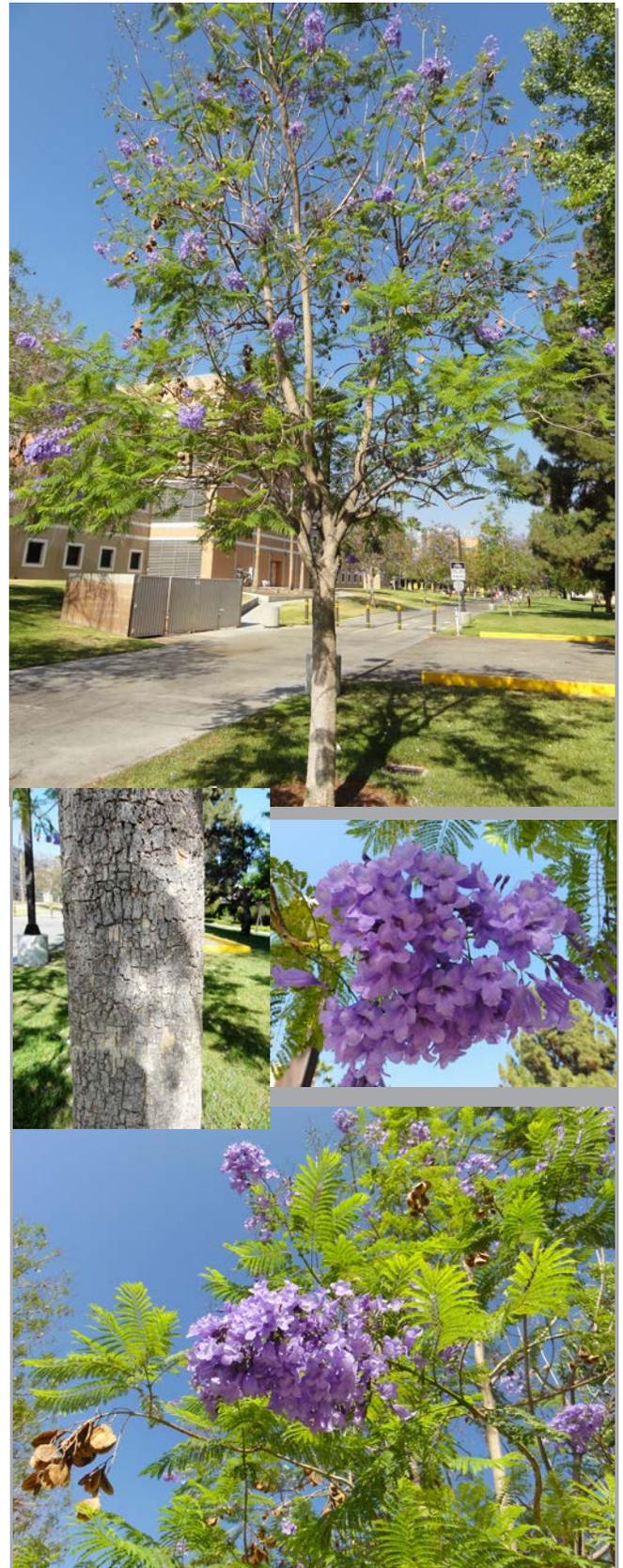
The Jacaranda is native to subtropical regions of South America, but is highly prevalent in many continents as an ornamental due to its attractive lavender flowers.

The tree can grow 25-40 feet in height with equal, or even greater, spread. It likes well-drained, deep soils and needs deep watering every 2 weeks during growing season.

The single or multi-stemmed tree is perennial in moderate climates, but turns deciduous in colder climates. The trumpet-like blue to lavender clusters of flowers (2 inches long) can bloom any time during the year, but peak in late spring.

The delicate, fern-like, bipinnately or odd-pinnately compound deciduous foliage appears in spring on bent or arching branches. The 1-3 inches long pod-like fruit turns brown and hard and does not attract wildlife.

Historically, the leaves, bark, and seeds have been used in treatment for *E. coli* as well as *Staphylococcus aureus*, or staph bacteria, since the plant contains a powerful healing substance called glutamic acid.





15. *Callistemon citrinus*: Lemon Bottlebrush

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Myrtales
Family	Myrtaceae
Genus	<i>Callistemon</i> R. Br.
Species	<i>Callistemon citrinus</i> (Curtis) Skeels

The Lemon Bottlebrush, native to Australia, is a large shrub to small tree which can grow 6-12 feet tall with a 6-9 foot spread.

It likes to grow in full sun, in well-drained soils composed of sandy loam. It is able to adapt to poor, but not too heavy, soggy soils.

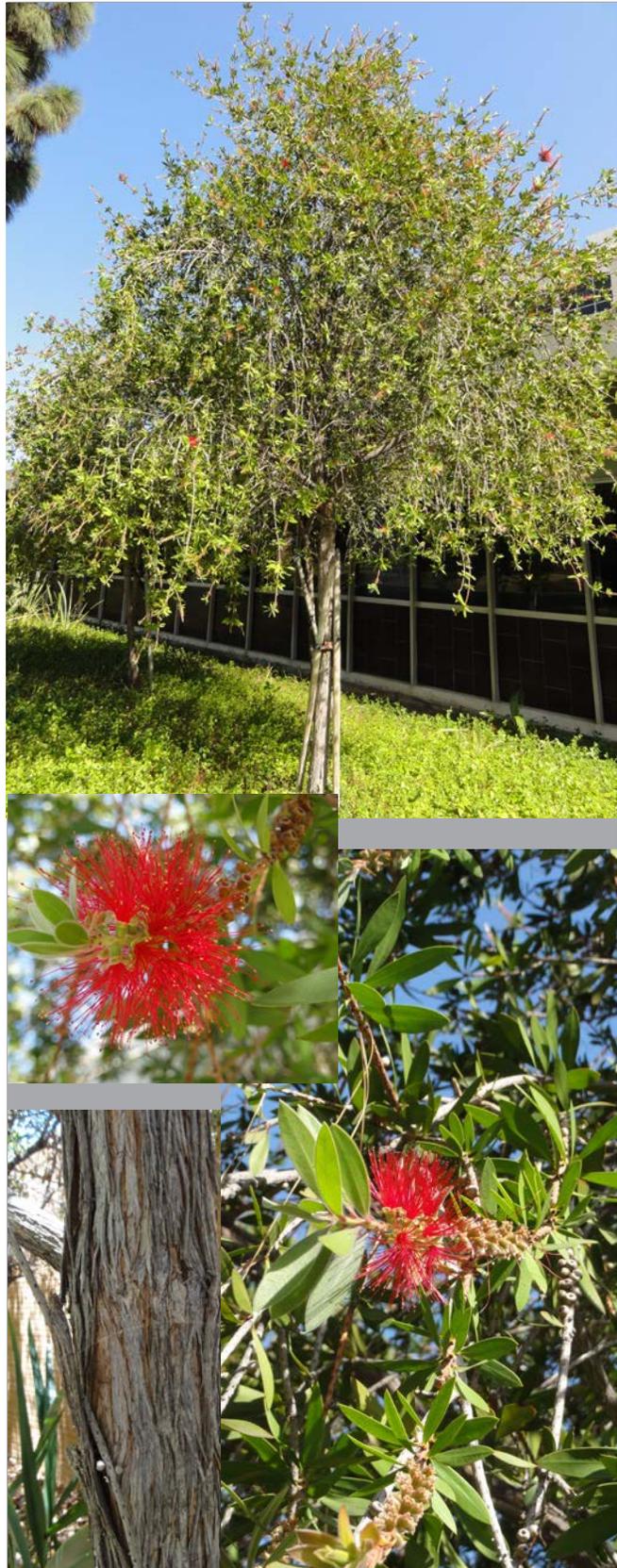
Once established, this evergreen tree is drought-tolerant, but enjoys occasional deep watering.

The tree is often multi-trunked, with gray colored, drooping branches that have thorns.

The leaves, bright-green, narrow and elliptic (up to 6 inches long), are leathery with a distinct citrus aroma when crushed, giving the tree its common name. New growth is pubescent and the fruits are brown, woody capsules.

The bark is rough and brown in color. Bright red flowers, mostly composed of stamens, are arranged around the stem tips in plump, fuzzy looking clusters, resembling the bristles on a brush used to clean bottles.

This popular landscape tree's blooms are a favorite for hummingbirds. The tree blooms in early spring, but also sporadically throughout summer.



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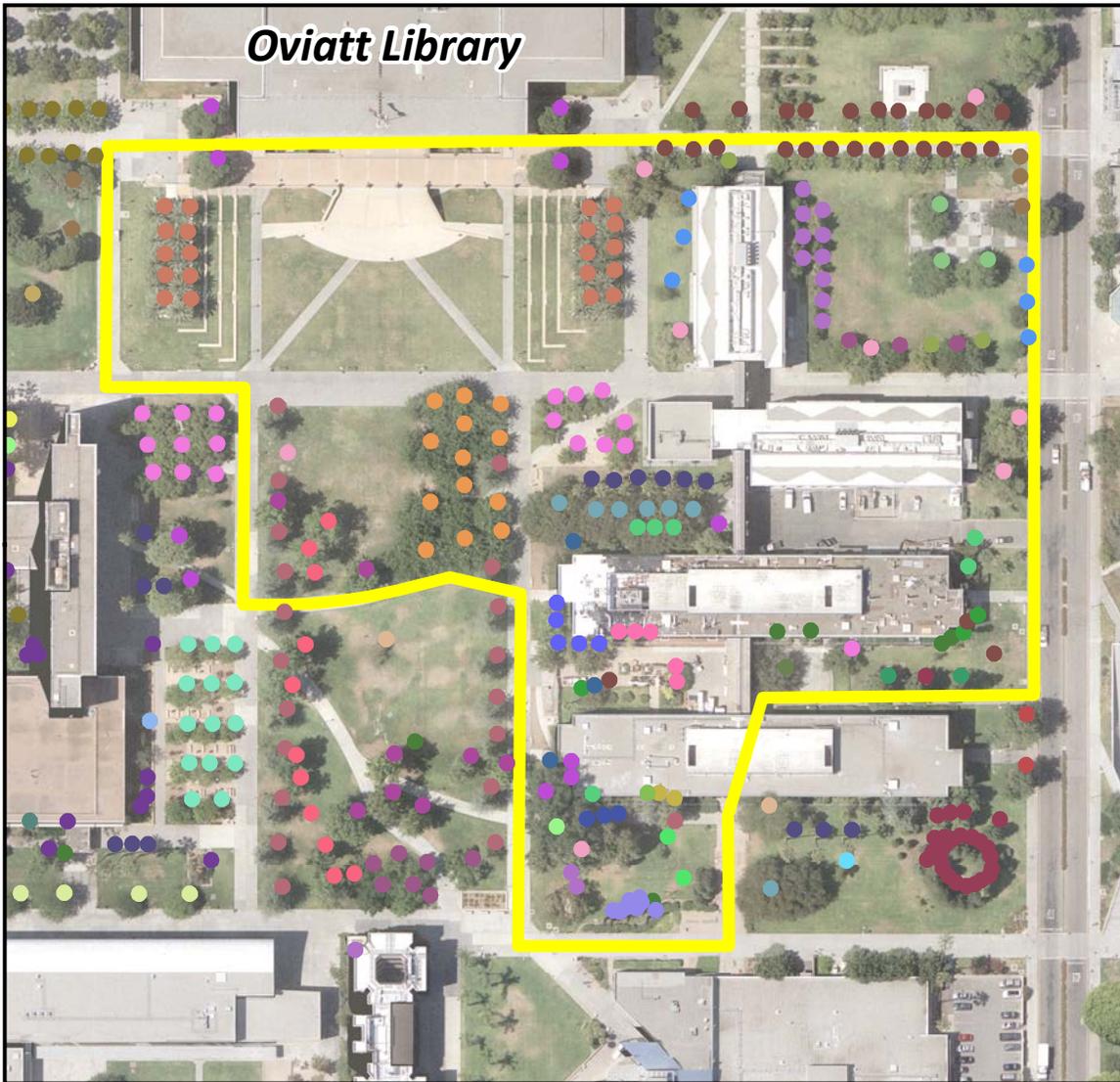
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APPENDIX I

Walk 1



0 70 140 280 420 Feet

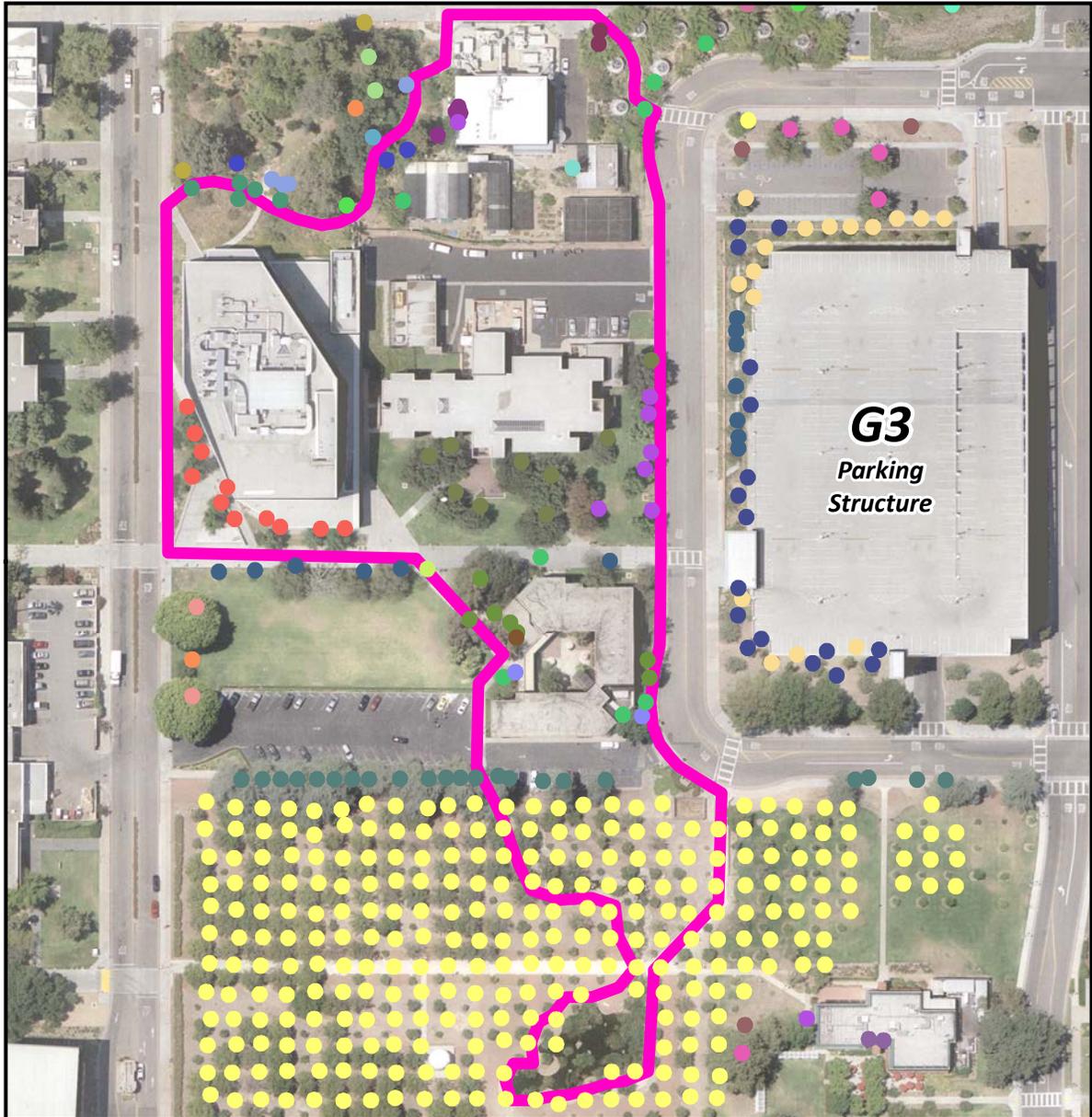
Walk 1 Tree Species

- | | | | |
|------------------------------------|---|--------------------------------|--------------------------------|
| ● <i>Alnus rhombifolia</i> | ● <i>Ginkgo biloba</i> | ● <i>Pinus canariensis</i> | ● <i>Trachycarpus fortunei</i> |
| ● <i>Araucaria bidwillii</i> | ● <i>Grevillea robusta</i> | ● <i>Pinus halepensis</i> | ● <i>Washingtonia robusta</i> |
| ● <i>Arbutus unedo</i> | ● <i>Juniperus chinensis 'Torulosa'</i> | ● <i>Pinus pinea</i> | ● <i>Yucca gloriosa</i> |
| ● <i>Bauhinia forficata</i> | ● <i>Lagerstroemia indica 'Rubra'</i> | ● <i>Platanus racemosa</i> | ● <i>Zelkova serrata</i> |
| ● <i>Brachychiton discolor</i> | ● <i>Liquidambar styraciflua</i> | ● <i>Platanus x acerifolia</i> | |
| ● <i>Brachychiton populneum</i> | ● <i>Liriodendron tulipifera</i> | ● <i>Podocarpus gracilior</i> | |
| ● <i>Cedrus deodara</i> | ● <i>Magnolia grandiflora</i> | ● <i>Pyrus kawakamii</i> | |
| ● <i>Cedrus libani</i> | ● <i>Magnolia grandiflora 'Majestic Beauty'</i> | ● <i>Quercus agrifolia</i> | |
| ● <i>Chamaerops humilis</i> | ● <i>Melaleuca quinquenervia</i> | ● <i>Quercus ilex</i> | |
| ● <i>Chorisia speciosa</i> | ● <i>Metasequoia glyptostroboides</i> | ● <i>Sequoia sempervirens</i> | |
| ● <i>Cupaniopsis anacardioides</i> | ● <i>Michelia sp</i> | ● <i>Tabebuia rosea</i> | |
| ● <i>Cupressus sempervirens</i> | ● <i>Morus alba</i> | ● <i>Taxus brevifolia</i> | |
| ● <i>Geijera parviflora</i> | ● <i>Phoenix canariensis</i> | ● <i>Tipuana tipu</i> | |





Walk 2



0 70 140 280 420 Feet



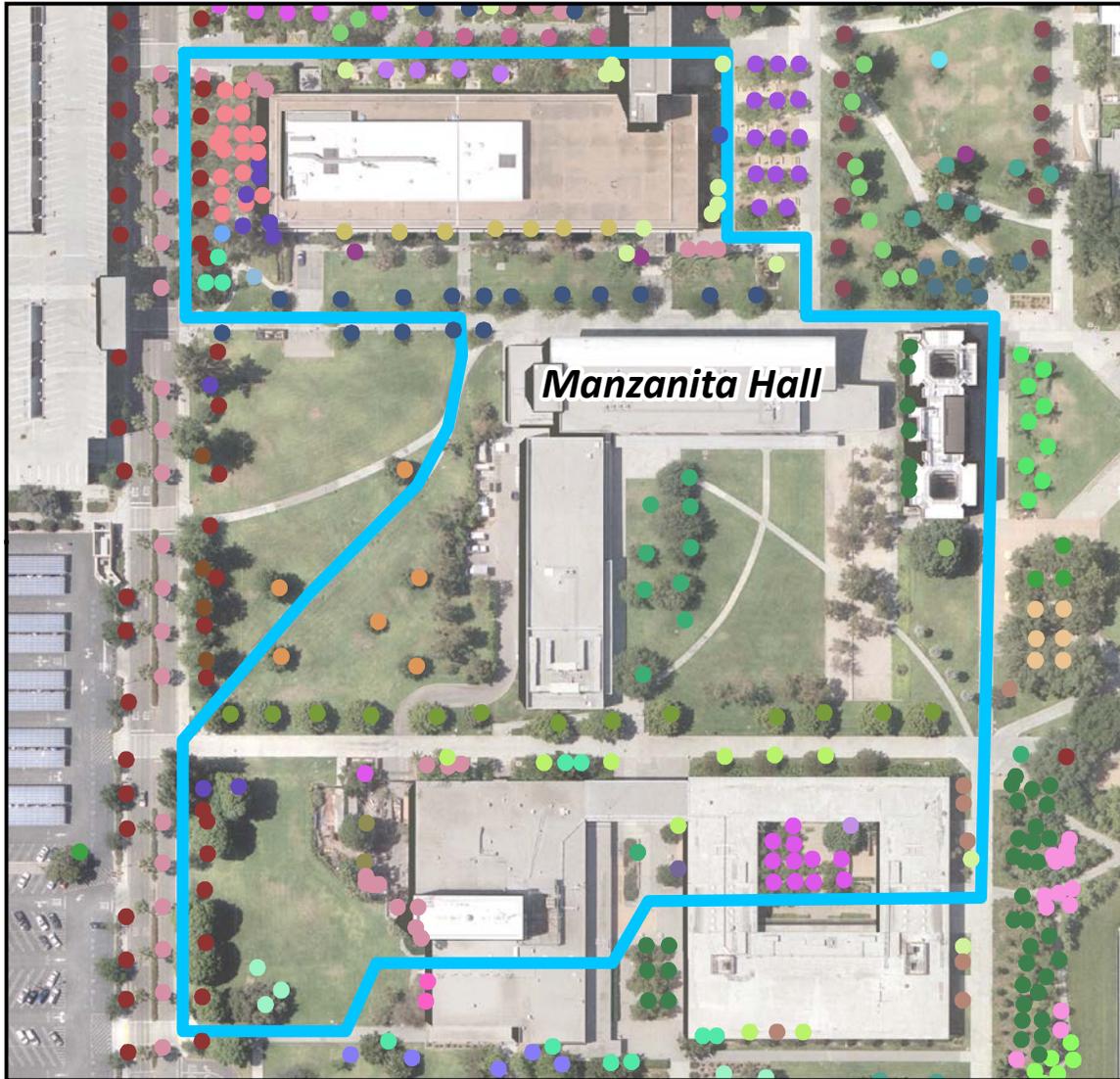
Walk 2 Tree Species

- | | | |
|--|--|---|
| ● <i>Arecastrum romanzoffianum</i> | ● <i>Ficus microcarpa 'Nitida'</i> | ● <i>Platanus x acerifolia</i> |
| ● <i>Bauhinia forficata</i> | ● <i>Geijera parviflora</i> | ● <i>Plumeria</i> |
| ● <i>Bauhinia sp.</i> | ● <i>Ginkgo biloba</i> | ● <i>Populus nigra v. 'Italica'</i> |
| ● <i>Cedrus deodara</i> | ● <i>Jacaranda mimosifolia</i> | ● <i>Quercus agrifolia</i> |
| ● <i>Ceratonia siliqua</i> | ● <i>Lagerstroemia indica</i> | ● <i>Quercus ilex</i> |
| ● <i>Cercidium floridum</i> | ● <i>Liriodendron tulipifera</i> | ● <i>Quercus lobata</i> |
| ● <i>Chilopsis linearis</i> | ● <i>Melaleuca quinquenervia</i> | ● <i>Sequoia sempervirens</i> |
| ● <i>Chitalpa tashkentensis</i> | ● <i>Phoenix reclinata</i> | ● <i>Tabebuia rosea</i> |
| ● <i>Chorisia speciosa</i> | ● <i>Pinus canariensis</i> | ● <i>Trachycarpus fortunei</i> |
| ● <i>Citrus sinensis 'Valencia'</i> | ● <i>Platanus racemosa</i> | ● <i>Washingtonia robusta</i> |



APPENDIX III

Walk 3



0 75 150 300 450 Feet

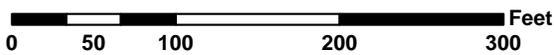
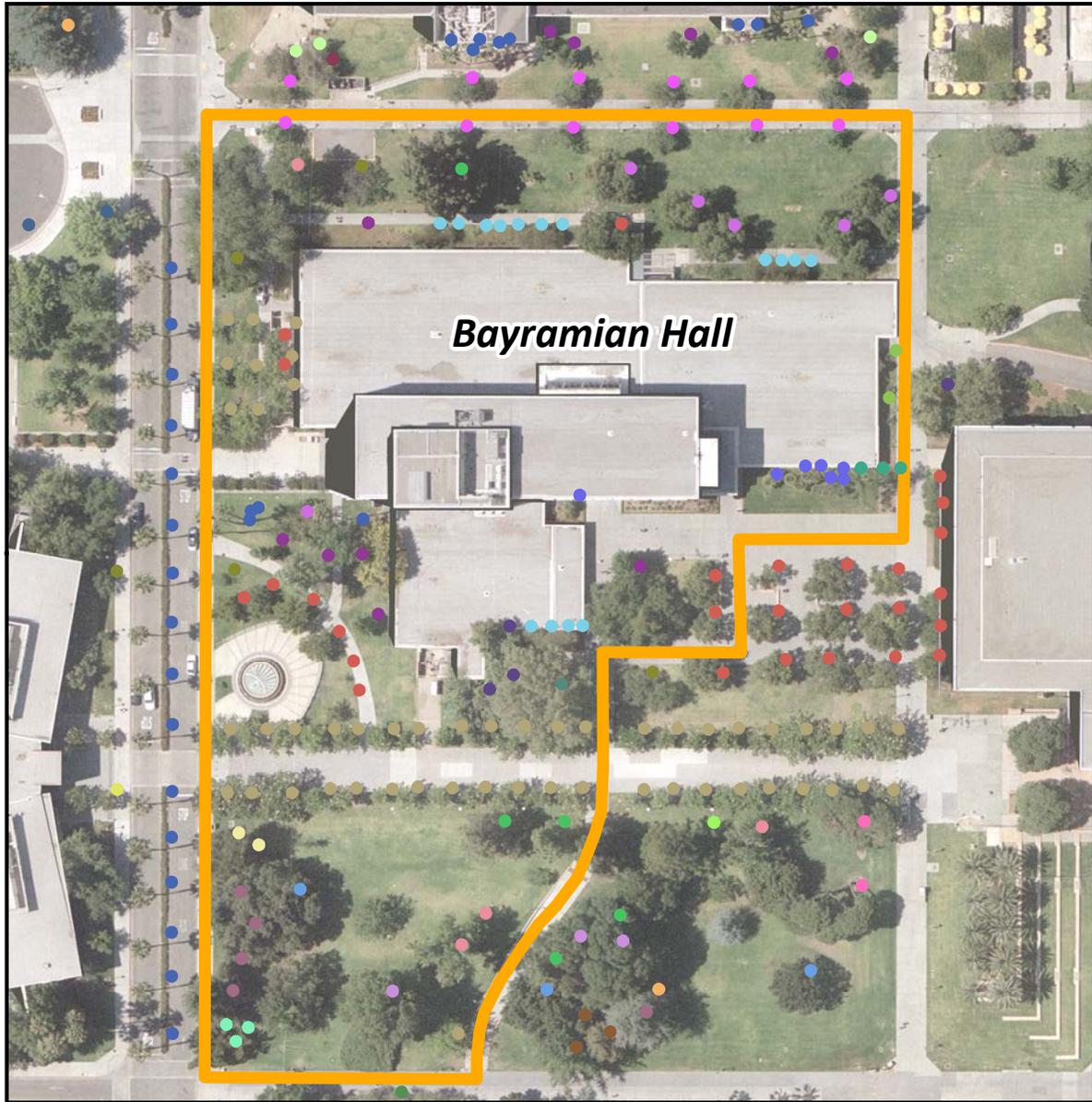


Walk 3 Tree Species

- | | | | |
|---|---|---|--------------------------------|
| ● <i>Alnus rhombifolia</i> | ● <i>Ficus auriculata</i> | ● <i>Laurus nobilis</i> | ● <i>Platanus x acerifolia</i> |
| ● <i>Arbutus unedo</i> | ● <i>Fraxinus uhdei</i> | ● <i>Liquidambar styraciflua</i> | ● <i>Podocarpus gracilior</i> |
| ● <i>Arecastrum romanzoffianum</i> | ● <i>Fraxinus velutina</i> 'Modesto' | ● <i>Liriodendron tulipifera</i> | ● <i>Pyrus kawakamii</i> |
| ● <i>Bauhinia forficata</i> | ● <i>Geijera parviflora</i> | ● <i>Magnolia grandiflora</i> | ● <i>Quercus agrifolia</i> |
| ● <i>Bauhinia variegata</i> | ● <i>Ginkgo biloba</i> | ● <i>Magnolia grandiflora</i> 'Majestic Beauty' | ● <i>Quercus ilex</i> |
| ● <i>Brachychiton populneum</i> | ● <i>Grevillea robusta</i> | ● <i>Melaleuca quinquenervia</i> | ● <i>Rhus lancea</i> |
| ● <i>Cedrus deodara</i> | ● <i>Juniperus chinensis</i> 'Torulosa' | ● <i>Morus alba</i> | ● <i>Sequoia sempervirens</i> |
| ● <i>Chamaerops humilis</i> | ● <i>Koelreuteria bipinnata</i> | ● <i>Olea europaea</i> | ● <i>Tabebuia rosea</i> |
| ● <i>Chorisia speciosa</i> | ● <i>Lagerstroemia indica</i> | ● <i>Pinus canariensis</i> | ● <i>Ulmus parvifolia</i> |
| ● <i>Cupaniopsis anacardioides</i> | ● <i>Lagerstroemia indica</i> 'Rubra' | ● <i>Platanus occidentalis</i> | ● <i>Washingtonia robusta</i> |
| ● <i>Eucalyptus sideroxyton</i> 'Rosea' | ● <i>Lagerstroemia indica</i> 'White' | ● <i>Platanus racemosa</i> | ● <i>Zelkova serrata</i> |



Walk 4



Walk 4 Tree Species

- | | | |
|-------------------------------|--|--------------------------|
| ● Acer palmatum | ● Juniperus chinensis 'Torulosa' | ● Quercus agrifolia |
| ● Araucaria bidwillii | ● Liquidambar styraciflua | ● Quercus ilex |
| ● Callistemon citrinus | ● Liriodendron tulipifera | ● Salix babylonica |
| ● Cedrus deodara | ● Magnolia grandiflora | ● Schinus molle |
| ● Chamaerops humilis | ● Magnolia grandiflora 'Majestic Beauty' | ● Sequoia sempervirens |
| ● Cupaniopsis anacardioides | ● Pinus canariensis | ● Syagrus romanzoffianum |
| ● Fraxinus uhdei | ● Pinus pinea | ● Trachycarpus fortunei |
| ● Fraxinus velutina 'Modesto' | ● Platanus racemosa | ● Washingtonia robusta |
| ● Ginkgo biloba | ● Platanus x acerifolia | ● Zelkova serrata |
| ● Jacaranda mimosifolia | ● Pvrus kawakamii | |





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