
OAK IMAGES FROM TEMPERATE NORTH AMERICA

by Guy Sternberg

Between 400 and 600+ species of true oaks (genus *Quercus*) can be found in North and Central America (ranging down into the northern edge of South America), Europe, Eurasia, East Asia, and North Africa. The precise number depends upon taxonomic considerations which are not in universal agreement as of this time, including the potential generic status of *Cyclobalanopsis* (generally classified as a subgenus of *Quercus*) and even the proper classification of *Lithocarpus* (generally accepted as a closely allied distinct genus, but having acorn-type fruit). The exact number of oaks also remains subject to further revision as some of the least-known species are studied more extensively and "lumped" or "split" taxonomically.

Whatever the worldwide total, approximately 100 distinct oak species can be found indigenous to various temperate-zone habitats in North America. The following photographic introduction to most of them is intended to illustrate the vast diversity of our native oak resource.²

The oaks are classified into three groups, historically called "subgenera" or "sections" or both. The white oak group also includes many other species, collectively native throughout the worldwide range of the genus, while the golden oak group and the red or black oak group are confined to the Western hemisphere. Many of the species within each of the subgeneric groups hybridize extensively, but only within their respective groups.

White Oaks -- Section *Quercus* (formerly known as subgenus *Lepidobalanus*)

1. *Quercus alba* Eastern white oak
The flagship species of the white oaks of the New World, and a dominant and colorful deciduous forest tree of eastern North America.
2. *Q. arizonica* Arizona white oak
A medium-sized semi-evergreen tree of the southwestern United States and adjacent Mexico.
3. *Q. austrina* Bluff oak
A medium-sized deciduous white oak favoring limestone bluffs and bottomlands in the Coastal Plain of the southeastern United States.
4. *Q. berberidifolia* California scrub oak (syn. *Q. dumosa* var. *berberidifolia*)
The widespread shrubby chaparral oak of California foothills usually evergreen.
5. *Q. bicolor* Swamp white oak
A large deciduous tree of the eastern United States and Canada, adapted to tight, poorly drained soils.
6. *Q. breweri* Brewer oak (syn. *Q. garryana* var. *breweri*)
A shrubby deciduous species (or variety) from the Trinity Alps and adjacent areas in northern California and southern Oregon.

²Editor's Note: All of the numbered species included in this paper were illustrated with color slides, which can not be reproduced here due to space limitations.

7. *Q. chapmanii* Chapman oak
A shrubby, semi-evergreen species occupying sandy soils in Florida and the adjacent Atlantic Coastal Plain.
8. *Q. cornelius-mulleri* Muller oak (syn. *Q. turbinella* var. *cornelius-mulleri*)
One of the dense western evergreen oaks, this species can be found on well-drained soils under near-desert conditions in southern California.
9. *Q. douglasii* Blue oak
One of the most picturesque of western oaks, this deciduous tree is common in the foothills and lower mountains of California.



Quercus douglasii. Oak Creek Canyon, Tehachapi, California, USA.

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10. *Q. dumosa* Coastal scrub oak
As now described, restricted to the coastal scrub species of southern California; this name once included several shrubby western oaks.
11. *Q. durata* Leather oak
A dense evergreen shrub confined mostly to serpentine rock substrate in the Coast Ranges of California.
12. *Q. engelmannii* Engelmann oak
A picturesque deciduous California tree, this species can be found from Los Angeles southward into Mexico.
13. *Q. fusiformis* Texas live oak (syn. *Q. virginiana* var. *fusiformis*)
Not always distinguished from southern live oak in the literature, this distinctive evergreen tree is much more winter-hardy, and grows inland across the Edwards Plateau of Texas and into Oklahoma.
14. *Q. gambelii* Rocky Mountain white oak
A variable and ubiquitous species, often cloning from lignotubers but seen occasionally as single-stemmed individuals, ranging throughout lower and middle elevations in the southern Rocky Mountain region.
15. *Q. garryana* Garry white oak
A large and majestic deciduous tree, the only native oak of the Pacific Northwest.
16. *Q. geminata* Sand live oak (syn. *Q. virginiana* var. *geminata*)
Named for its twin acorns, this species is distinguished from southern live oak by its rolled leaves and slightly more restricted range in the southeastern Coastal Plain.

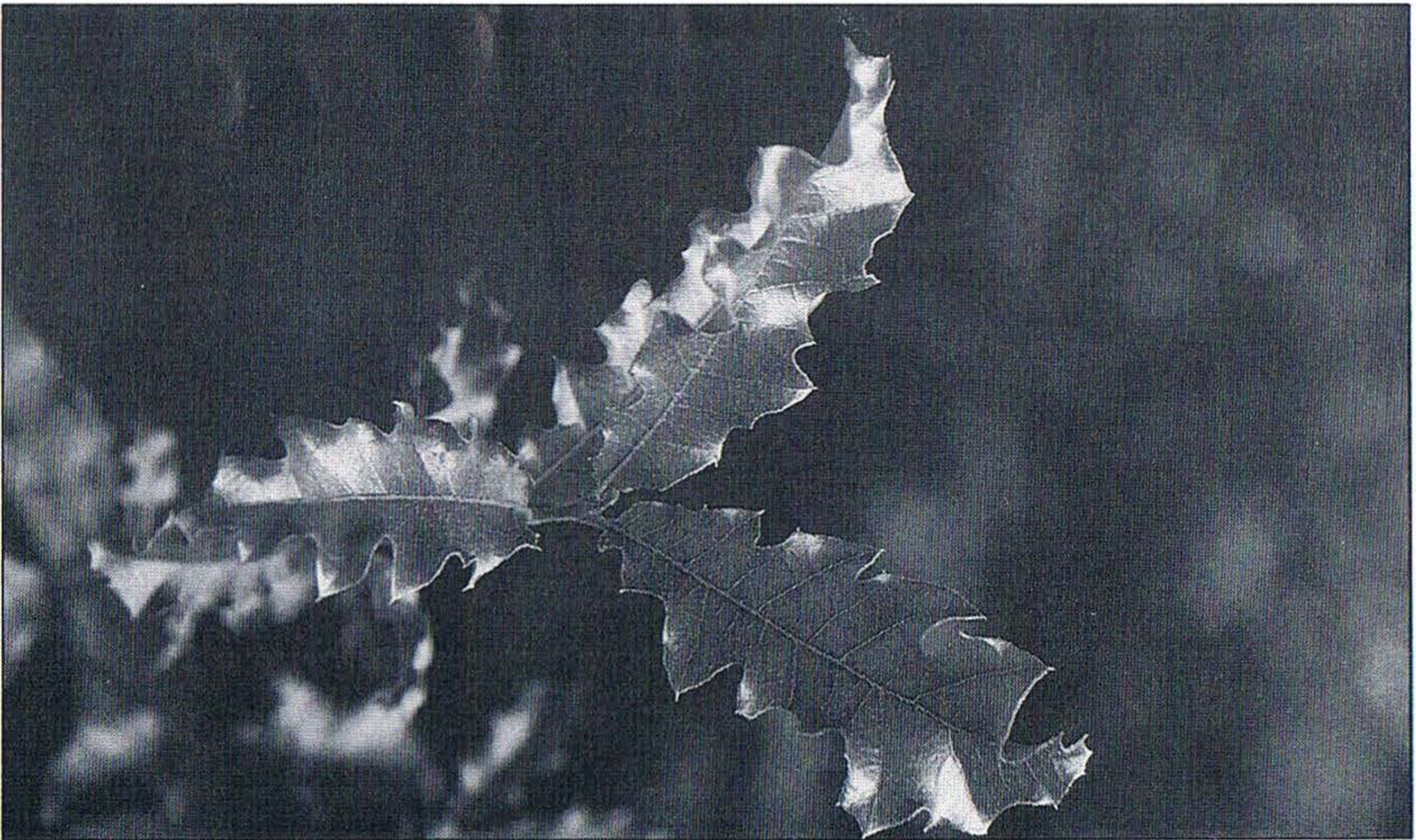
17. *Q. grisea* Gray oak
A small, semi-evergreen tree of the southwestern United States and Mexico, with conspicuous gray foliage.
18. *Q. havardii* Shin oak
A ground-cover shrub covering large areas in the Edwards Plateau region.
19. *Q. hinckleyi* Hinckley oak
Perhaps our rarest oak, this shrub occurs at a single location on Solitario Mountain in southern Texas.
20. *Q. john-tuckeri* Desert scrub oak (syn. *Q. turbinella* var. *john-tuckeri*)
The dwarf blue oak of California, a semi-evergreen small tree of middle elevations in California.



Quercus john-tuckeri. Guy Sternberg with a typical form at Pine Canyon, Tehachapi, California, USA. © Guy & Edith Sternberg

21. *Q. laceyi* Lacey oak (syn. *Q. glaucooides*)
A small deciduous oak of Texas and temperate areas of northern Mexico.
22. *Q. laeta* Mexican white oak
An attractive, spreading, deciduous tree of middle elevations in the Sierra Madre of Mexico.
23. *Q. lobata* Valley oak
Probably our largest oak, the characteristic dominant deciduous tree of lower and middle elevations in California; surprisingly winter-hardy under cultivation elsewhere.
24. *Q. lyrata* Overcup oak
Our most water tolerant oak, this deciduous tree has evolved acorns with floating caps that enclose and grip the nut, aiding seed distribution during floods.
25. *Q. macrocarpa* Bur oak
A giant and adaptable deciduous tree of eastern forests and midwestern savannas; one of the most versatile of our native oaks for a variety of habitat and climate situations.
26. *Q. margaretta* Sand post oak
Usually a small deciduous tree or cloning shrub, which possibly evolved as a stabilized hybrid of post oak and Rocky Mountain white oak during a time when the two species were sympatric; native to pine barrens and sand scrub areas of the Southeast.

27. *Q. michauxii* Swamp chestnut oak (syn. *Q. prinus*)
One of the tallest and most ornamental of all oaks; a deciduous species of moist soils in the Southeast.
28. *Q. montana* Rock chestnut oak (syn. *Q. prinus*)
A deciduous white oak with dark, furrowed bark, found as a dominant component of many forests in the Appalachian uplands.
29. *Q. muhlenbergii* Chinkapin oak (syn. *Q. muehlenbergii*)
This deciduous tree is the most adaptable of our eastern native oaks to various soil pH conditions, and has the broadest natural geographic and habitat range of any of our temperate-zone oaks.
30. *Q. oerstediana* Oersted oak (syn. *Q. garryana* var. *semota*)
A clumping or cloning small tree of southern California, very similar to Rocky Mountain white oak.
31. *Q. oglethorpensis* Oglethorpe oak
A rare and unusual deciduous oak of wet flats, confined in the wild to a few locations in Georgia and South Carolina; surprisingly winter hardy under cultivation.
32. *Q. polymorpha* Monterrey white oak
Common in many habitat types in Mexico and Central America, this species reaches its northern limit in Texas; a variable species with horticultural potential.
33. *Q. prinoides* Dwarf chinkapin oak
A petite version of chinkapin oak, found in savannas and barrens in eastern North America.
34. *Q. pungens* Sandpaper oak
A small semi-evergreen chaparral tree of the Southwest, with sandpaper-like foliage.



Quercus pungens. Seedling at the Starhill Forest Arboretum, Petersburg, Illinois, USA.
© Guy & Edith Sternberg

35. *Q. rugosa* Net-leaf oak
A medium-sized evergreen species with attractive rugose foliage, native to mountains in Arizona, New Mexico, Texas and throughout Mexico.
36. *Q. sadleriana* Deer oak
A dwarf chestnut-type oak from the Trinity Alps area of northern California and adjacent Oregon, spreading to form clonal thickets.
37. *Q. sinuata* Bastard oak (syn. *Q. durandii*)
A small to medium-sized deciduous tree found in wet soils and limestone areas of the Southeast.
38. *Q. stellata* Post oak
One of the toughest and slowest-growing of our oaks; a deciduous tree found in poor soils through the South.
39. *Q. turbinella* Scrub live oak (syn. *Q. dumosa* var. *turbinella*)
A high-elevation evergreen shrub or small tree of the Southwest.
40. *Q. (x) undulata* Wavy-leaf oak
Often recognized as a distinct species, wavy-leaf oak actually is thought to be a grex of hybrids involving several southwestern oak species.
41. *Q. virginiana* Southern live oak
The classic evergreen oak of the Old South; a broad-spreading tree reaching massive proportions.

Additional North American white oak species not illustrated:

<i>Q. ajoensis</i>	<i>Q. mohriana</i>
<i>Q. carmenensis</i>	<i>Q. oblongifolia</i>
<i>Q. boyntonii</i>	<i>Q. pacifica</i>
<i>Q. chihuahuensis</i>	<i>Q. similis</i>
<i>Q. depressipes</i>	<i>Q. toumeyii</i>
<i>Q. intricata</i>	<i>Q. vaseyana</i>
<i>Q. minima</i>	
(syn. <i>Q. virginiana</i> var. <i>minima</i>)	

Golden Oaks -- Section *Protobalanus* (formerly known as subgenus *Protobalanus*)

42. *Q. chrysolepis* Canyon live oak
The flagship evergreen tree of this small, intermediate subgeneric taxon, variable in size and found scattered on steep slopes and in canyons of California and adjacent states.
43. *Q. palmeri* Dunn oak (syn. *Q. dunni*)
A shrubby evergreen species with small, crisp, often spiny foliage and conspicuously rolled or skirted acorn caps; common along trails in the Grand Canyon and similar habitats of the Southwest.
44. *Q. vacciniifolia* Huckleberry oak (syn. *Q. chrysolepis* var. *vacciniifolia*)
A shrubby evergreen species of high elevations in California and southern Oregon.

Additional North American golden oak species not illustrated:

<i>Q. tomentella</i>	Channel Island oak
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Red (Black) Oaks - Section Lobatae (former subgenus *Erythrobalanus*)

45. *Q. acerifolia* Maple-leaf oak (syn. *Q. shumardii* var. *acerifolia*)
A medium-sized deciduous oak found in the wild only on a few high elevations in the Ozarks; an attractive and adaptable species under cultivation.
46. *Q. agrifolia* Coast live oak
The conspicuous and picturesque evergreen oak of the California coastline; one of the only red oaks with acorns maturing in a single year.
47. *Q. arkansana* Arkansas oak
A medium-sized deciduous upland tree, similar to blackjack oak but with smaller leaves, found in scattered locations in the South.
48. *Q. buckleyi* Texas shumard oak (syn. *Q. texana*)
A colorful small deciduous tree from the Edwards Plateau of Texas and adjacent Oklahoma.
49. *Q. canbyi* Chisos oak
An upland tree found in the cloud forests of Mexico, semi-evergreen in the wild but semi-deciduous and colorful under cultivation farther north.
50. *Q. coccinea* Scarlet oak
A large, attractive deciduous tree of poor soils and sandy uplands in the southeastern United States; easily confused with (and closely allied to) northern pin oak.
51. *Q. durifolia* Durango emory oak
A relative of our native southwestern emory oak, this species from Durango, Mexico, is displaying surprising winter hardiness in Illinois.



Quercus durifolia. Seedling at the Starhill Forest Arboretum, Petersburg, Illinois, USA. © Guy & Edith Sternberg.

52. *Q. ellipsoidalis* Northern pin oak
A northern upland deciduous tree, very similar to pin oak and scarlet oak; one of the most winter hardy and colorful of our oaks.
53. *Q. emoryi* Emory oak
An evergreen shrub or tree from the Southwest; another of the few red oaks with fruit maturing in a single season.

54. *Q. falcata* Southern red oak
A large and handsome deciduous tree adapted to poor clay soils in the Southeast.
55. *Q. georgiana* Stone Mountain oak
This shrubby deciduous species, very similar in general appearance to bear oak, is confined in the wild to a few granitic outcrops in Georgia and adjacent states, but does well under cultivation much farther north.
56. *Q. gravesii* Chisos red oak
A medium-sized deciduous tree from the Chisos Mountains of western Texas and adjacent Mexico.
57. *Q. hemisphaerica* Laurel oak (syn. *Q. laurifolia* var. *hemisphaerica*)
A large semi-evergreen oak found on sandy uplands in the South.
58. *Q. hypoleucoides* Silverleaf oak
One of the most ornamental of all oaks, this small southwestern evergreen tree has bicolored leaves that shimmer silvery in the wind.
59. *Q. ilicifolia* Bear oak
A shrubby, thicket-forming deciduous species found in barrens and balds in the Northeast.
60. *Q. imbricaria* Shingle oak
An attractive large deciduous tree with unlobed leaves, common in disturbed habitats in the central states.
61. *Q. incana* Bluejack oak
An attractive small semi-deciduous tree with narrow leaves, common in sandy soils in the South and adaptable under cultivation farther north.



Quercus incana. Pictured at the Starhill Forest Arboretum, Petersburg, Illinois, USA.
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62. *Q. inopina* Sand oak
An evergreen shrub confined to nearly pure sand habitats in central Florida.
63. *Q. kelloggii* California black oak
The large, deciduous and colorful black oak found in upland sites in California.
64. *Q. laevis* Turkey oak
A small, thicket-forming deciduous tree common on sandy sites in the Southeast.

65. *Q. laurifolia* Swamp laurel oak
One of our most flood-tolerant species, this is a semi-deciduous tree from wet sites in the Southeast.
66. *Q. marilandica* Blackjack oak
A medium-sized deciduous tree, extremely slow growing and scruffy but often quite long-lived; adapted to inhospitable sites throughout the South.
67. *Q. mexicana* Mexican oak
A medium-sized evergreen or semi-evergreen species from Mexico, resembling shingle oak in general appearance; seems surprisingly hardy in Illinois.
68. *Q. myrtifolia* Myrtle oak
A small evergreen tree forming scrub thickets on sandy sites in Florida and adjacent coastal areas.



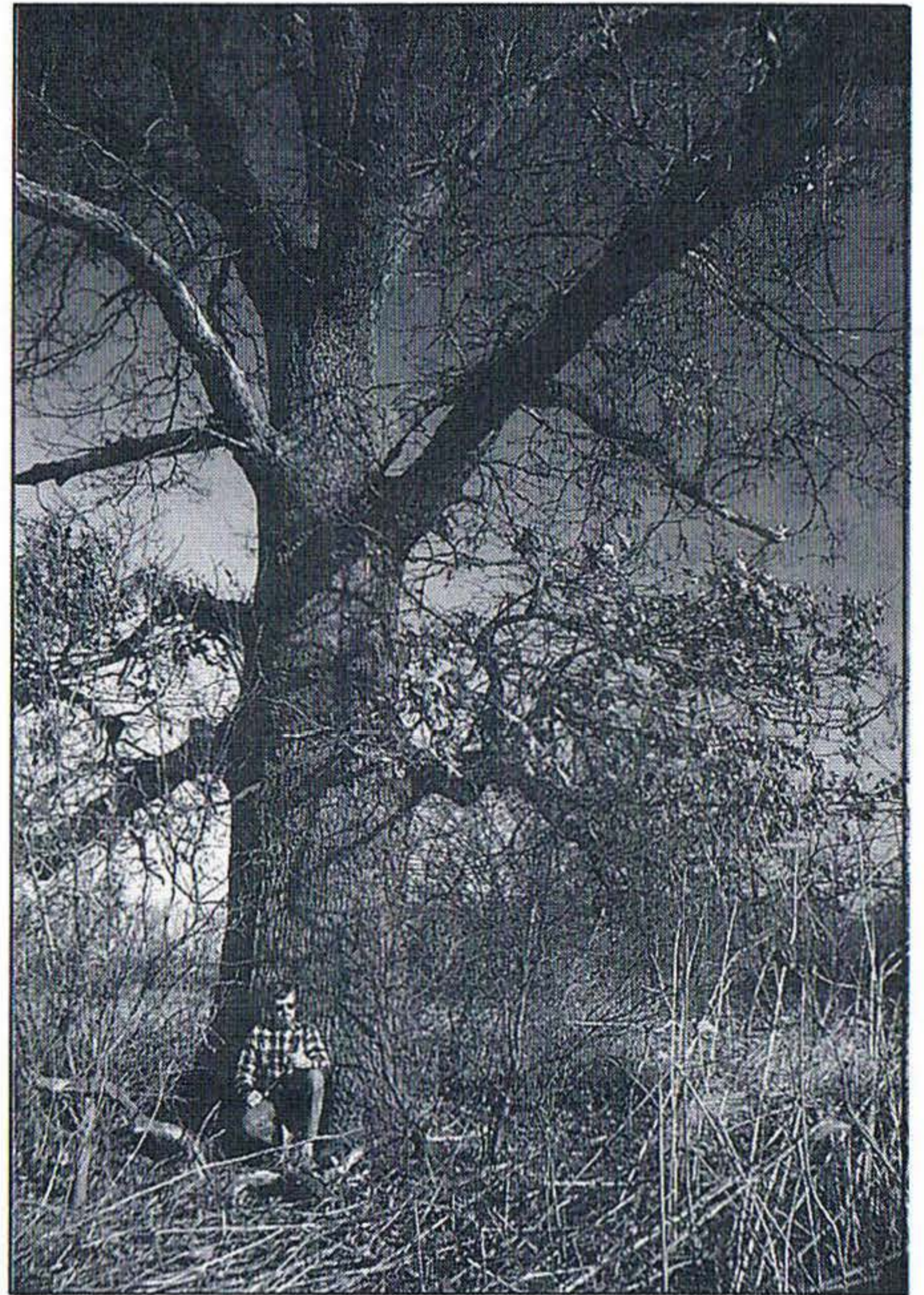
Quercus myrtifolia. Leaves and acorns, Alligator Point, Florida, USA. © Guy and Edith Sternberg

69. *Q. nigra* Water oak
A fast-growing tree commonly used for landscaping in the South; semi-deciduous and adaptable to a broad range of soil conditions.
70. *Q. pagoda* Cherrybark oak (syn. *Q. falcata* var. *pagodifolia*)
One of our finest timber trees; a tall, straight deciduous species common in floodplain sites in the South.
71. *Q. palustris* Pin oak
The ubiquitous landscape tree of the nursery trade, often planted beyond its range of adaptability and showing consequent signs of alkaline chlorosis; a deciduous floodplain tree of eastern riparian forests and swamps.
72. *Q. parvula* Island oak (syn. *Q. wislizenii* var. *parvula*)
An obscure evergreen shrubby species found only on the Channel Islands of California.
73. *Q. phellos* Willow oak
A large and fine-textured landscape tree from wet soil habitats in the Southeast.
74. *Q. rubra* Northern red oak
The consummate timber tree of the North; this common deciduous species is one of our largest and most winter-hardy oaks.

75. *Q. rysophylla* Loquat oak
A medium-sized evergreen from the mountains of Mexico, with beautifully textured foliage.
76. *Q. sartorii* Sierra Madre oak
Another Mexican red oak, found to hybridize in the wild with loquat oak; this tree is showing early promise as a winter-hardy species in Illinois, where it has been deciduous.
77. *Q. shumardii* Shumard oak
A large, straight, deciduous tree of moist soil areas in the Southeast, often seen in cultivation.
78. *Q. texana* Nuttall oak (syn. *Q. nuttallii*)
A fast-growing deciduous tree, closely allied with pin oak, found in wet clay soils in the lower Mississippi Valley; progeny from the northernmost known provenance (var. *cachensis*, found by Sternberg in Illinois in 1972) are displaying winter hardiness in USDA Zone 5.
79. *Q. velutina* Eastern black oak
A large and colorful deciduous tree common on poor or dry soils over a broad range in eastern North America.
80. *Q. wislizeni* Interior live oak
A beautiful, dense evergreen tree of inland slopes in California.

Additional North American red/black oak species not illustrated:

- Q. graciliformis*
- Q. parvula* var. *shrevei*
- Q. pumila*
- Q. viminea*
- Q. robusta*



Quercus velutina. Guy Sternberg pictured with a fine specimen in Menard County, Illinois, USA.
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Guy Sternberg is the director and owner of the Starhill Forest Arboretum, Petersburg, Illinois, USA. since 1975.



Quercus petraea (Left) and *Quercus robur* (Right) near Risnov, Romania. In the foreground Guy Sternberg on left and Dr. Stelian Radu at the right. © Guy & Edith Sternberg