Trees and Shrubs for Sustainable Built Environments
HORT 306 Fall 2018

Plant List 3
Large & Medium Deciduous Trees II
Reading Assignments

In *Landscape Plants For Texas And Environs, Third Ed.*

- Intro materials on trees (p. 681, 997) and shrubs (p. 682, 807)
- Family descriptions for:
- Descriptions for individual species
  See page listings on Plant List 3 Handout
  (also available under lists on course website)
**Liriodendron tulipifera**  Tulip Poplar

- One of the largest trees, to 200’, in Eastern USA forests, but only 40’ – 60’ in NE Texas
- Grown in mesic parts of USDA zones 4 – 8(9); drought and salinity intolerant
- Requires rich moist acidic well drained soils
- Handsome summer foliage, orangish green tulip-like spring flowers very high in canopy
- Grows very rapidly but slow to flower
Liriodendron tulipifera  Tulip Poplar

- Valued for golden yellow fall color
- Large erect oval crowns in winter landscapes
- Valuable timber
- Bark is a favorite of beavers
- Easily affected by trunk rots if bark is damaged
**Pyrus calleryana**

**Callery Pear**

- **Medium deciduous tree, 30’ - 40’ tall**
  - Narrow upright oval to broadly teardrop-shaped
  - Dark glossy green leathery foliage, fall color variable from green to yellow, orange, red, or maroon-purple
  - White spring fragrant / malodorous (?) flowers
  - Small pome fruits, brown, inedible, utilized by wildlife
  - Variable heat (z. 7 - 9) and cold tolerance (z. 6a - 4b)

- Adaptable to adverse sites, seasonal poor drainage
- Resistant to many diseases / pests of *Pyrus spp.* except fireblight
- Many clones have poor branching structure
**Pyrus calleryana ‘Bradford’**

Bradford Callery Pear

- *P. calleryana* cultivar with teardrop shape, extremely uniform and favorite of designers, excessively formal
- High chilling requirement & tendency for summer dormancy often ruin flower effect in central/south TX
- Extremely poor branching structure, long-term liability
- Other cultivars have been selected, supposedly with better branching structure, time will tell

*Fireblight*
Pyrus calleryana ‘Bradford’
Bradford Callery Pear

Scion

Rootstock

What’s wrong with this tree?
**Pyrus communis** Common Pear

- Medium, 20’ - 30’, deciduous tree, hardy in USDA z. 5(4)-9
- Source of commercial pears, important fruit tree
- Clones vary tremendously in adaptability to Texas regions
- Susceptible to fireblight
- Messy in manicured lawns
Quercus spp.  Oaks

- Huge economic, ecological, and historical implications
- Red/black oaks vs. white oaks
- Oak wilt (*Ceratocystis fagacearum*) and sudden oak death (*Phytophthora ramorum*)
- Very promiscuous taxa
Quercus acutissima  Sawtooth Oak

- A medium size, 35’ to 45’ (60’) tall, introduced deciduous Asian oak useful in USDA zones 6 (5b) – 9a
- Dark glossy green chestnut-like leaves, upright oval to pyramidal in youth, broader with age
- Plants tend to hold the tan brown leaves into winter, particularly when young, and can function as a screen
Quercus acutissima
Sawtooth Oak

- Easily transplanted, drought and heat tolerant
- Mast species for wildlife
- Needs training when young, prone to chlorosis on neutral to high pH soils
- 'Gobbler' is a seed propagated line with rapid growth, good cold tolerance, & profuse acorn production from S.C.S.
Large (50’ - 70+)’ deciduous shade tree, hardy z. 6 – 10a
- Pyramidal in youth
- Round crown with age

Bottomland species adaptable to upland sites
- Tolerates clay soils and periodic flooding, rapid grower
- Prone to chlorosis on high pH soils; mast species

One of most widely used, but least desirable oaks
- Subject to heart rots, powdery mildew, weak wooded
- Leaves difficult to rake
- Requires lots of “limbing-up”
- Dense shade & surface roots hinder turf culture
Quercus phellos
Willow Oak

- Large (60’-80’) deciduous shade tree, hardy in USDA zones 5b – 9; can be a liability with age
  - Needs some moisture, even more prone to chlorosis on high pH soils than *Q. nigra*
  - Readily transplanted, rapid growth rate
- Attractive pyramidal form in youth, rounded form with age
  - Constant “limbing up” for clearance
  - Pruning requirements & size limit
    - use as street tree
- Fine textured willow-like leaves, difficult to rake
- Similar uses as *Q. nigra*, but less objectionable in East Texas, more objectionable westward
Southern Red Oak
*Quercus falcata*

- A large deciduous bottomland tree of the Southern U.S., adapted to USDA zones 6a-9
- Dark lustrous olive green leaves, muted orange-red to red fall color
Quercus falcata
Southern Red Oak

- Heat tolerant, can withstand occasional poor drainage
- Intolerant of high pH soils and not overly drought tolerant, susceptible to oak wilt
- *Quercus falcata* var. *pagodifolia* (Cherrybark Oak) is a highly desirable bottomland timber tree; differs in bark and leaf shape
**Quercus macrocarpa**

*Bur Oak*

- Large (60’- 80’) deciduous shade tree, cold hardy to USDA z. 3 & tolerates heat of z. 9
  - Stout trunk divided into several large branches forming bulk of oval to rounded crown
  - Huge acorns
  - Pleasantly coarse textured, medium growth rate
  - Very wind firm
**Quercus macrocarpa**

**Bur Oak**

- Very widely distributed native oak, well adapted to both warm and cold regions, variety of soils
  - Drought and limestone soil tolerant
- May be too large for residential use; excellent park / street tree where sans overhead utility lines
- Asset with age, needs a little TLC at transplant
Quercus muehlenbergii
Chinkapin Oak

- Increasingly popular medium to large deciduous tree; needs good drainage
- Valued for its attractive disease-free foliage, pleasing growth form, and adaptability to a range of sites
- Can tolerate high pH soils and drought with correct provenance selection, moderate growth rate, useful in USDA zones 5-9
**Quercus polymorpha**  
**Monterrey Oak**

- Medium size, 35’ to 45’ (60’), upright oval crowned evergreen/ semi-evergreen oak
- Highly variably lobed thick leathery dark green to blue-green leaves; from Mexico
- Only recently entering the mainstream trade; useful in USDA z. 8 (7?) - 11
- Appears adaptable to a range of conditions, including heat & drought
- Tolerates higher relative humidity than many xeric climate oaks making it useful further into SE USA, increasingly popular
**Quercus shumardii**

**Shumard Oak**

- Large (50’-60’) deciduous shade tree, oval to rounded
- With proper provenance selection can be used on higher pH soils, adapted to USDA z. 4 – 9a, Texas native
- Attractive “Red Oak” shaped-leaves, good red fall color with some genotypes in right environments
Some tolerance to soil salts, but intolerant of foliar salts and poor drainage

Probably the best of red oak group for widespread use in Texas; important mast species for wildlife

Provenance selection is a critical for sustainable use
Quercus buckleyi
Texas Red Oak

- Formerly *Quercus texana*, used in zones 6 to 9a (9b)
- A medium to large, 30’ to 50’ (70’), deciduous tree very closely related to *Q. shumardii*
- Somewhat smaller of leaf and plant size and more drought and high pH soil tolerant than *Q. shumardii*
- Lustrous dark green summer foliage, red-orange to bronze-red fall color is possible
- Avoid poorly drained sites, susceptible to oak wilt
**Quercus rubra**
Northern Red Oak

- Northern counterpart to *Q. falcata*
- A large deciduous forest and landscape tree from the Eastern U.S., popular in USDA zones 3 – 8a
- Long straight boles on forest trees, spreading upright oval crowns when open grown
- Poor performer in droughty alkaline soils and hot summers, only useful in NE portion of our region
Quercus palustris
Pin Oak

- Important landscape/forest tree of East/Central USA
- Maybe most widely planted landscape oak in USA, easy to transplant, handsome habit, occasional red fall color, pyramidal form, USDA z. 5 (4b) – 8
- Constant pruning of lower limbs, drooping and swooping / chlorosis limits Texas use
**Quercus stellata**  
Post Oak

- **Medium / large (40’ - 60’) deciduous shade tree**  
  - Best substitute for White Oak (*Q. alba*) in much of Texas

- **Dominant tree in post oak savannah region**  
  - Important native landscape tree in Central Texas  
  - USDA z. 5-9, of minor importance outside Texas/Oklahoma  
  - Very slow grower; essentially old growth forests
Quercus stellata
Post Oak

- Tolerates variety of well drained soils, but intolerant of prolonged wet soils, compaction, or disturbance
  - Frequently damaged by compacted soils, disturbed root zone, alteration of drainage, application of irrigation in new developments, planning required to save *in situ* trees
Quercus alba versus Quercus stellata
• Large important landscape / timber / mast tree of eastern USA, East Texas native, useful on mesic sites with acidic soils in USDA z. 4 (3) – 8 (9a)

• Beautiful form, foliage, fall color, but needs moist acidic soils, has extensive taproot system, and is extremely sensitive to root disturbance / compaction
Quercus laceyi
Lacey Oak

- Picturesque handsome small to medium tree
- Blue-gray foliage, new growth pink
- USDA zones 7(6b)-9b
- Heat, drought, alkaline soil tolerant
- High humidity and heavy soils are a problem in Southeast Texas, best I-35 west
**Sapindus drummondii**  
**Western Soapberry**

- **Medium, 30’ - 40’, deciduous tree native to western USA, with upright oval crown, useful in USDA z. 6 (5b) - 9**
- **Creamy white late spring/early summer flowers**
- **Yellow fruit in late summer/fall on female trees, *poisonous*, asset in summer/fall, liability by late winter, can be weedy**
**Sapindus drummondii**
Western Soapberry

- Clean summer foliage, often a good yellow fall color
- Any moderately well-drained soil, tolerates heat, cold, drought, salt, high pH soils, very durable
- Probably under-utilized in Texas landscapes
- New borer might be a brewing problem

**Sassafras albidum**

**Sassafras**

- A medium to large, 30’ to 60’ tall, deciduous tree of Eastern North America, including East Texas
- Handsome aromatic summer foliage is followed by yellow, orange, and/or red fall color
- Blue-black fruit and pink-red pedicels are mildly showy
**Sassafras albidum**

- Sympodial branch structure and corky bark are interesting.
- A pioneer species that is site responsive, may develop chlorosis on high pH soils, has suckering tendencies.
- Intolerant of foliar salt exposure, but heat and cold tolerant.
- Naturalizing, shade tree, bank or slope stabilization.
Ulmus plagued with Diseases / Pests / Liabilities but still beloved
Ulmus alata
Winged Elm

• Medium deciduous native shade tree
• Variable in height, 30’ to 60’ depending on location and genotype, USDA z. 6 – 9 (10a)
  – Irregularly vase-shaped to oval crown
• Durable adaptable species, rapid grower
• Numerous elm diseases, powdery mildew and Dutch elm disease are most troublesome
  – Perhaps more DED resistant than *U. americana*, but still susceptible
  – Inferior tree to *U. crassifolia*, less refined, weedy
Ulmus americana
American Elm

- Large 60’ - 80’+ deciduous native tree, zones 3 to 9 (10a)
  - Famous for cathedral lined streets of vase-shaped trees
  - Also upright oval to broad spreading oak-like forms
  - Very urban tolerant
**Ulmus americana**

**American Elm**

- Steeped in American folklore, victim of DED
  - Despite architecturally unmatched vase-shaped habit, they are subject to numerous insect and disease pests
  - DED, phloem necrosis, wet wood, bark beetles, cotton root rot, and elm leaf beetle to name the serious ones
- Very adaptable, former favorite for difficult urban sites
- Breeding for disease resistance progresses, DED resistant clones are available, but vary in chilling requirements
Ulmus crassifolia
Cedar Elm

- Medium to large deciduous shade tree
- Typical rounded to oval form, sometimes vase-shaped, zones 6 to 9 (10a)
- One of best elms for regional landscapes
  - Good outline, refined growth habits
  - Good resistance to most elm diseases
    - Moderately resistant to DED and cotton root rot, but poor branch angles in youth
    - Moderately susceptible to powdery mildew, especially in high humidity; elm leaf beetle
  - Fairly site adaptable, good urban tolerance
- Underutilized; some splitting in high winds
Ulmus parvifolia
Lacebark Elm

- Semi-evergreen to deciduous medium (30’ - 50’) tree, use temperate to tropics
  - Variable cold tolerance (cold as z. 5b to only surviving z. 8 winters), semi-evergreen types are less cold hardy
  - Fine textured dark glossy green foliage
  - Sometimes develops a good red to red-purple fall color
Ulmus parvifolia
Lacebark Elm

- Outstanding to interesting bark, highly variable
  - Smooth gray plating tan / brown to mottled flaky brown bark
- Fairly disease/pest resistant, susceptible to mistletoe, cotton root rot, and elm leaf spot, DED resistant
- Unfortunately confused with inferior *U. pumila*
- Can be very weedy & is starting to escape cultivation
- Prone to ice damage
Ulmus parvifolia
Lacebark Elm

Can a plant be too well adapted?
Zelkova serrata
Japanese Zelkova

- Medium (50’ - 60’) vase-shaped deciduous tree
- When open grown has a short stout trunk, numerous upward arching branches
- Highly resistant to DED, possible *U. americana* substitute, used widely in Upper South / Midwest
- Adaptability to Texas somewhat variable, needs irrigation, USDA z. 6 (5) – 8(9a)
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