Tree Identification
ISA Certified Arborist

Study guide for the Arborist Certification exam of the International Society of Arboriculture.

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Why Does It Matter?

Plant Classification

Plant Classification (taxonomy)

Kingdom (Plant)

Phylum (Vascular plants or not)

Class (Angiosperms; di or monocotyledons

Gymnosperms have "naked seeds")

Order

Family (Similar characteristics)

Genus (Closely related, *Quercus*)

Species (**THE** individual plant)

Plant Nomenclature

Plant Nomenclature (naming of plants)

Common names vs. Latin names

Genus and species…. ***Quercus stellata***

Varieties & cultivars… *var.* & 'Little gem'

Plant Morphology (appearance of tree parts)

Branching structure (alternate, opposite, whorled)

Leaf type (simple or compound)

Leaf margins, apices & bases

Plant Morphology continued

Bud type and arrangement

Twig & pith characteristics

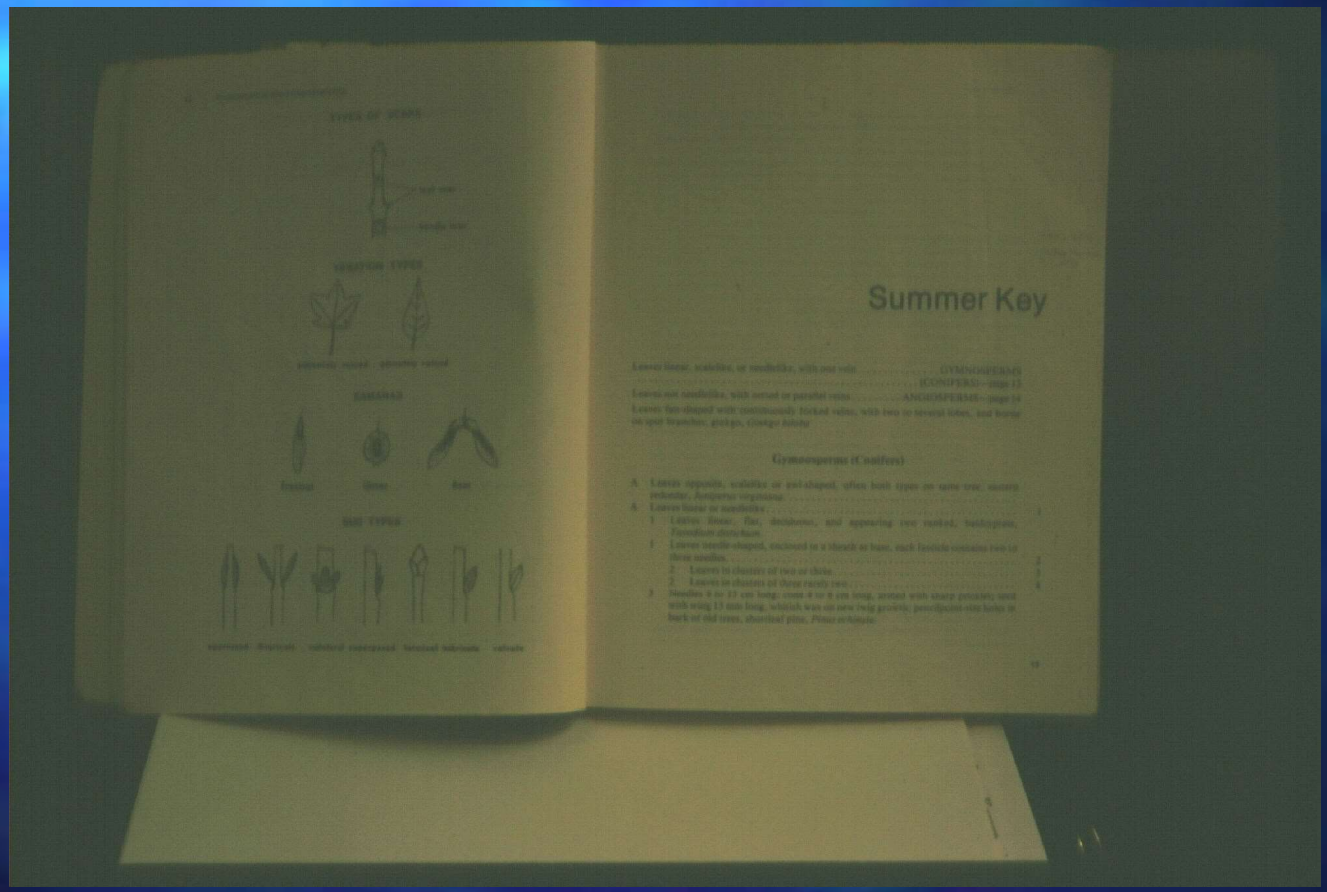
Seed types (acorn, samara, legume, etc.)

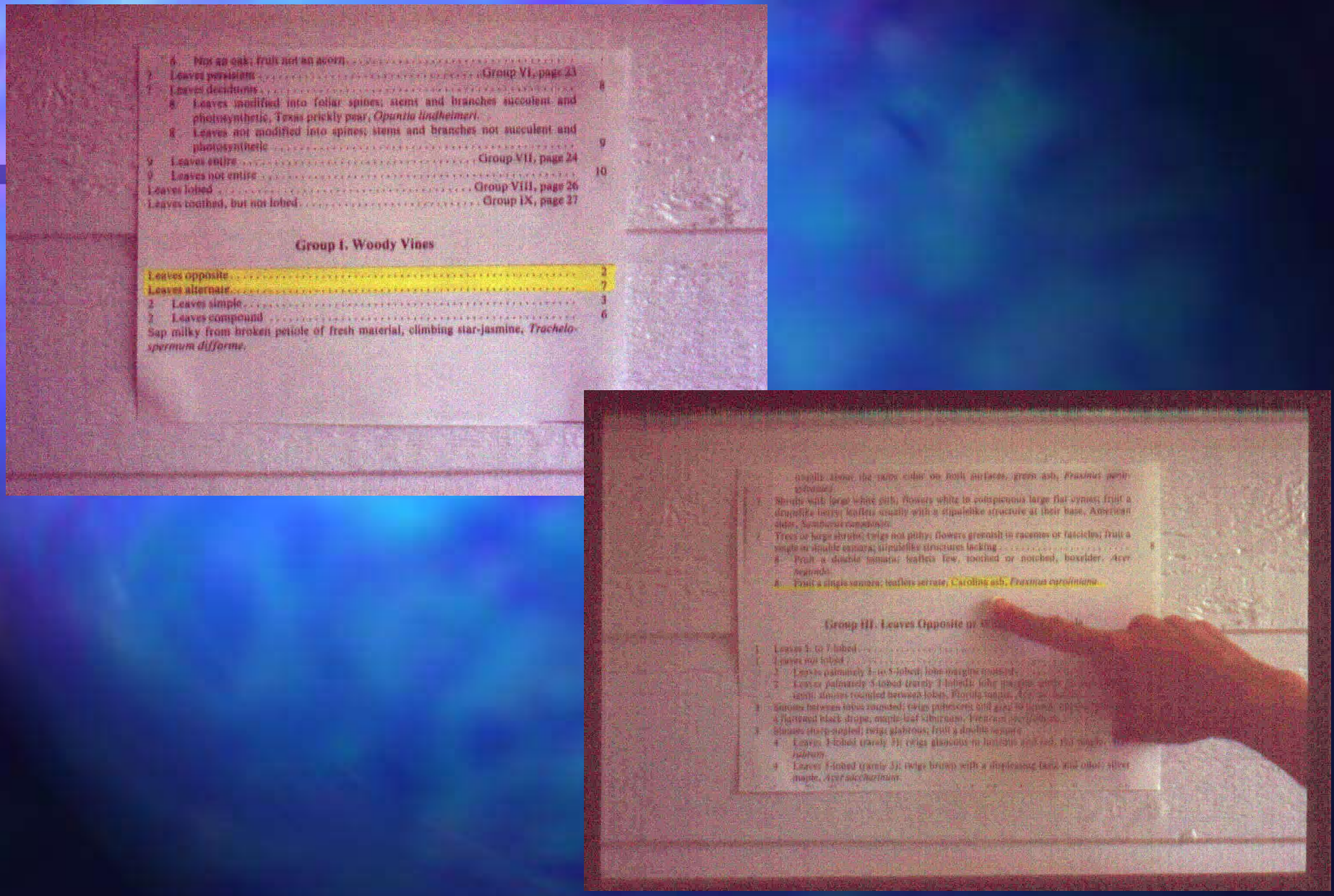
Bark characteristics (ex. hackberry "warts")

Form & habitat

Flowers (ex. flowering dogwood)

"Keys" are helpful





6 Not an oak; fruit not an acorn
7 Leaves persistent ..... Group VI, page 23
7 Leaves deciduous 8
8 Leaves modified into foliar spines; stems and branches succulent and photosynthetic, Texas prickly pear, *Opuntia lindheimeri*.
8 Leaves not modified into spines; stems and branches not succulent and photosynthetic 9
9 Leaves entire ..... Group VII, page 24
9 Leaves not entire 10
Leaves lobed ..... Group VIII, page 26
Leaves toothed, but not lobed ..... Group IX, page 27

Group I. Woody Vines

Leaves opposite 2
Leaves alternate 7
2 Leaves simple 3
2 Leaves compound 6
Sap milky from broken petiole of fresh material, climbing star-jasmine, *Trachelospermum difforme*.

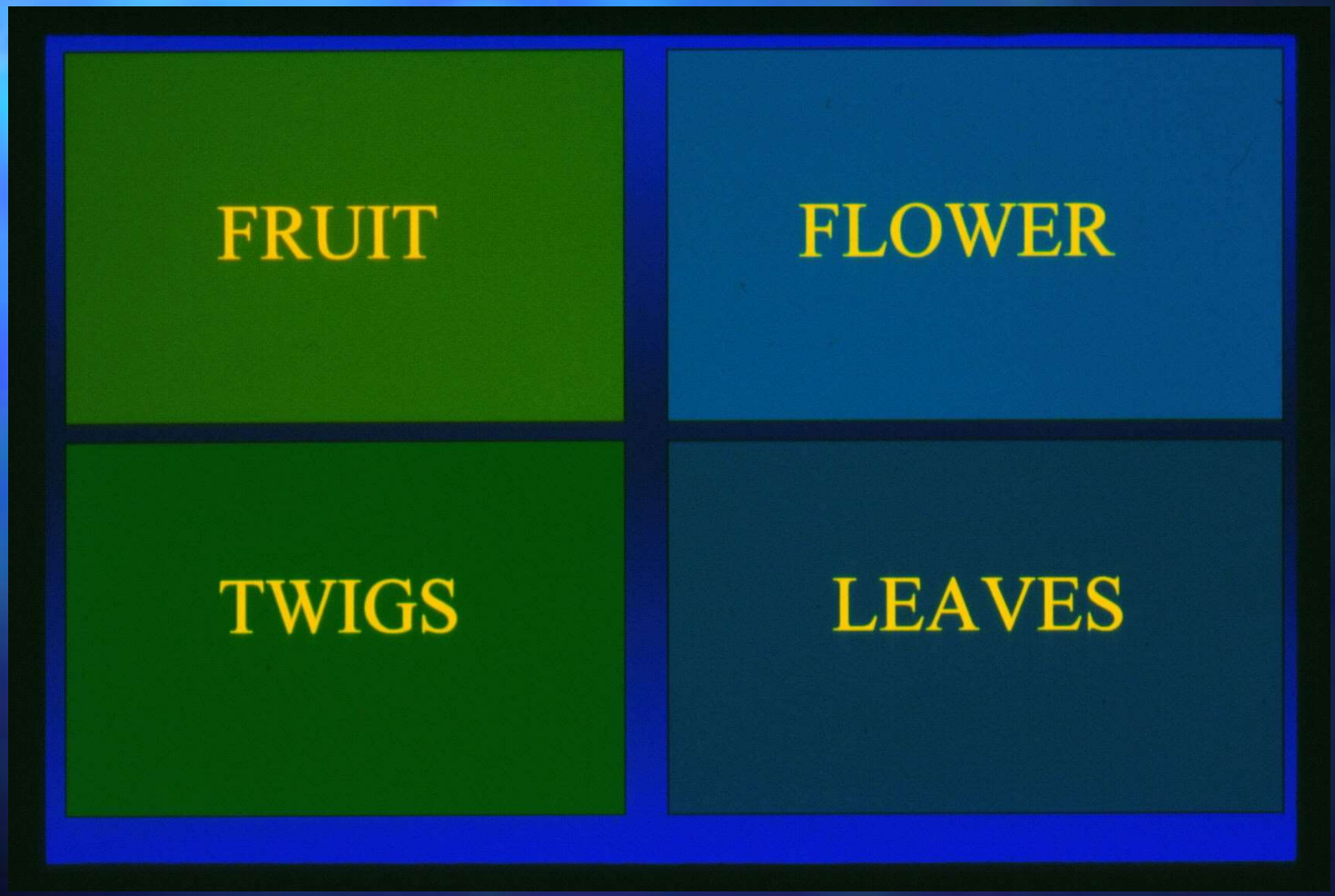
...angle above, the same color on both surfaces, green ash, *Fraxinus pennsylvanica*.
7 Shrubs with large white pith; flowers white in conspicuous large flat cymes; fruit a drupelike berry; leaflets usually with a stipellike structure at their base, American elder, *Sambucus canadensis*.
7 Trees or large shrubs; twigs not pithy; flowers greenish in racemes or fascicles; fruit a samara or double samara; stipellike structures lacking 8
8 Fruit a double samara; leaflets few, toothed or notched, boxelder, *Acer negundo*.
8 Fruit a single samara; leaflets serrate, Carolina ash, *Fraxinus caroliniana*.

Group III. Leaves Opposite or [illegible]

1 Leaves 3- to 7-lobed ..... [illegible]
1 Leaves not lobed ..... [illegible]
2 Leaves palmately 3- to 5-lobed; lobe margins toothed ..... [illegible]
2 Leaves palmately 5-lobed (rarely 3-lobed); lobe margins entire or with a few small, distant rounded teeth between lobes, Florida torreya, [illegible]
3 Sinuses between lobes rounded; twigs pubescent; fruit a double samara, [illegible]
3 Sinuses sharp-angled; twigs glabrous; fruit a double samara ..... [illegible]
4 Leaves 3-lobed (rarely 5); twigs glaucous to lustrous and red; fruit single, [illegible] *rubrum*.
4 Leaves 5-lobed (rarely 3); twigs brown with a displeasing odor; fruit silver maple, *Acer saccharinum*.

Regionalized References

Main ID Characteristics



Flowers - Sometimes Easy

Sometimes Not

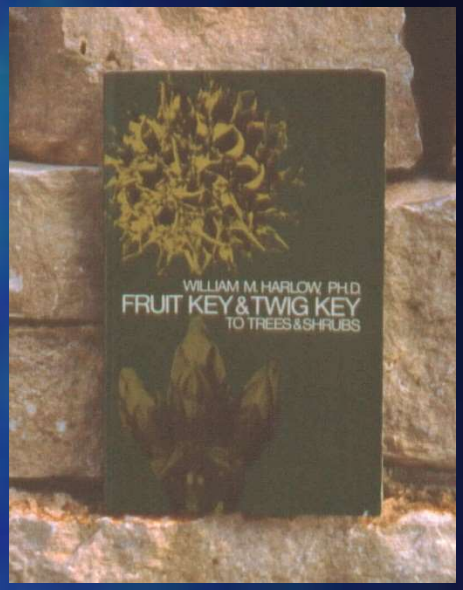
- Taxonomists first choice
- Not present for long
- Very difficult for non-botanists

Fruit - Seed

- Very diagnostic
- Often present longer than flowers
- Dioeceous trees?
- Sexual maturity

Buds & Twigs

- Leaf scars
- Bud types
- Bud scales
- Linticles
- Pith



Buds & Twigs

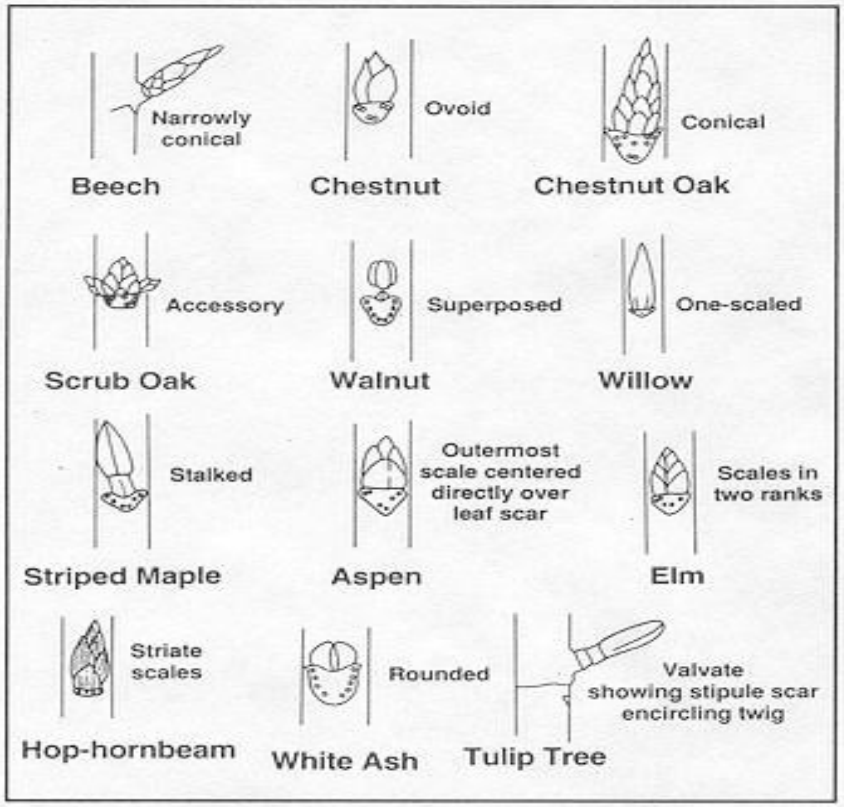


Fig. 2.10 Various types of buds found in trees.

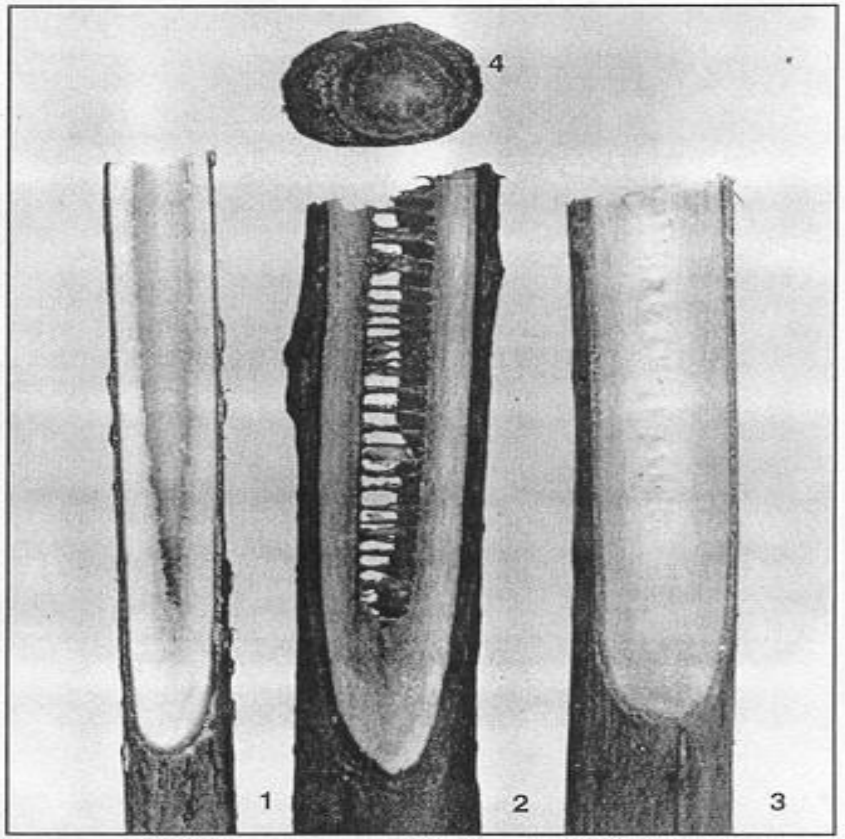


Fig. 2.11 Pith characteristics
1. weeping forsythia (hollow)
2. walnut (chambered)
3. winter honeysuckle
4. star-shaped pith of oak

Stem Arrangement

opposite alternate whorled

Look on newest growth!

Stem Arrangement – cont'd

Alternate – Most trees have this type of arrangement. This is the most common form.

Opposite – Very uncommon in Texas trees. Remember this acronym …. "MAD BUCK". Maples, Ashes, Dogwoods and Buckeyes have this form of branching.

Whorled – Even less common. The most notable landscape trees would be the Catalpas.

Remember to look on newest growth for the branching arrangement! (branch tips)

Leaves

- Most common ID for non-professionals
- Hundreds of variations in form & type
- Present much of the year in our region

Leaf Arrangement & "Parts"

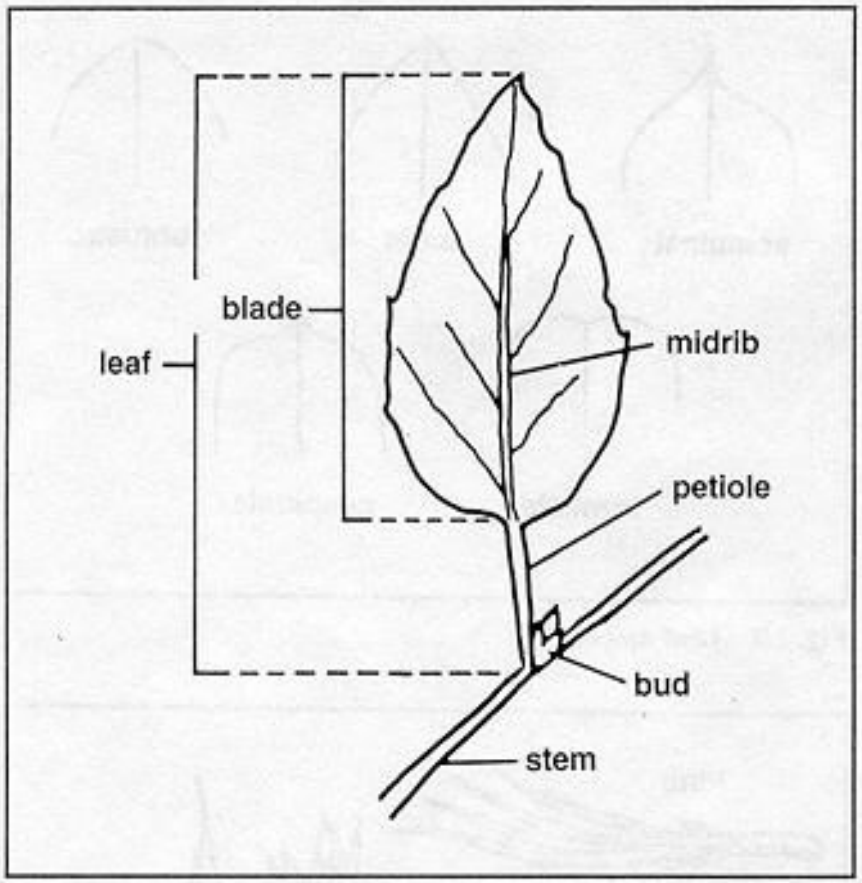


Fig. 2.2 Anatomy of a simple leaf.

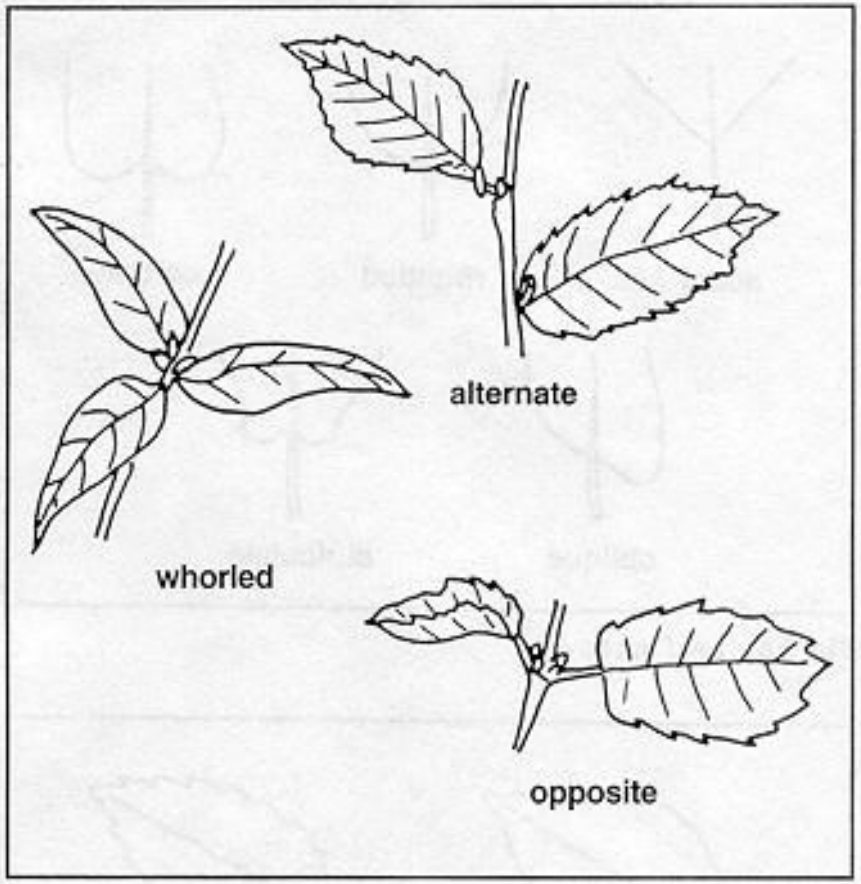


Fig. 2.4 Leaf arrangements on a stem.

Leaf Types

Simple Compound Needle

Compound Leaf Types

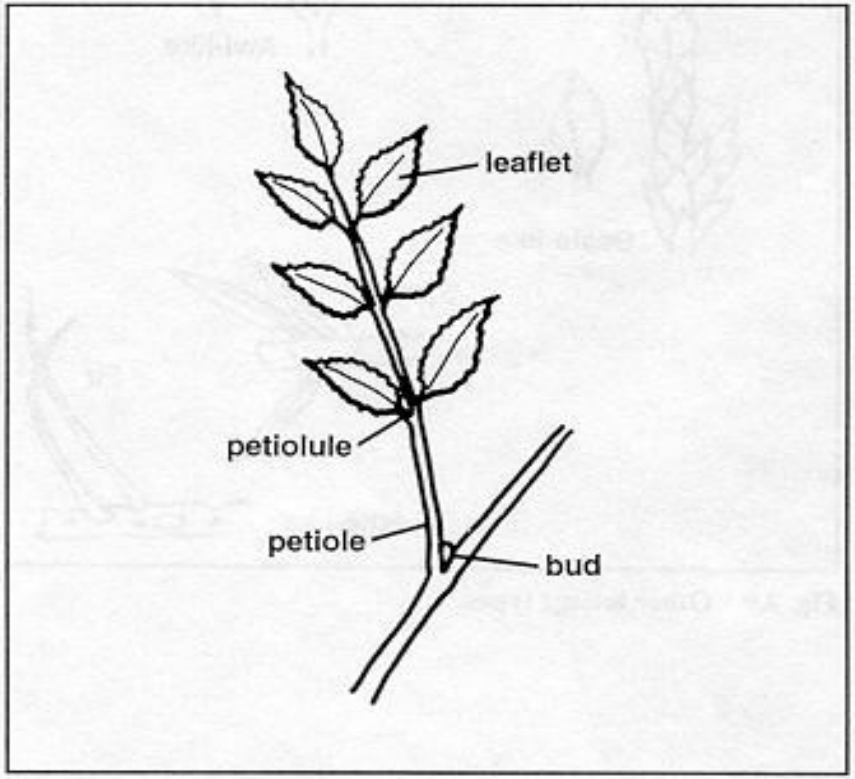


Fig. 2.3 Compound leaf.

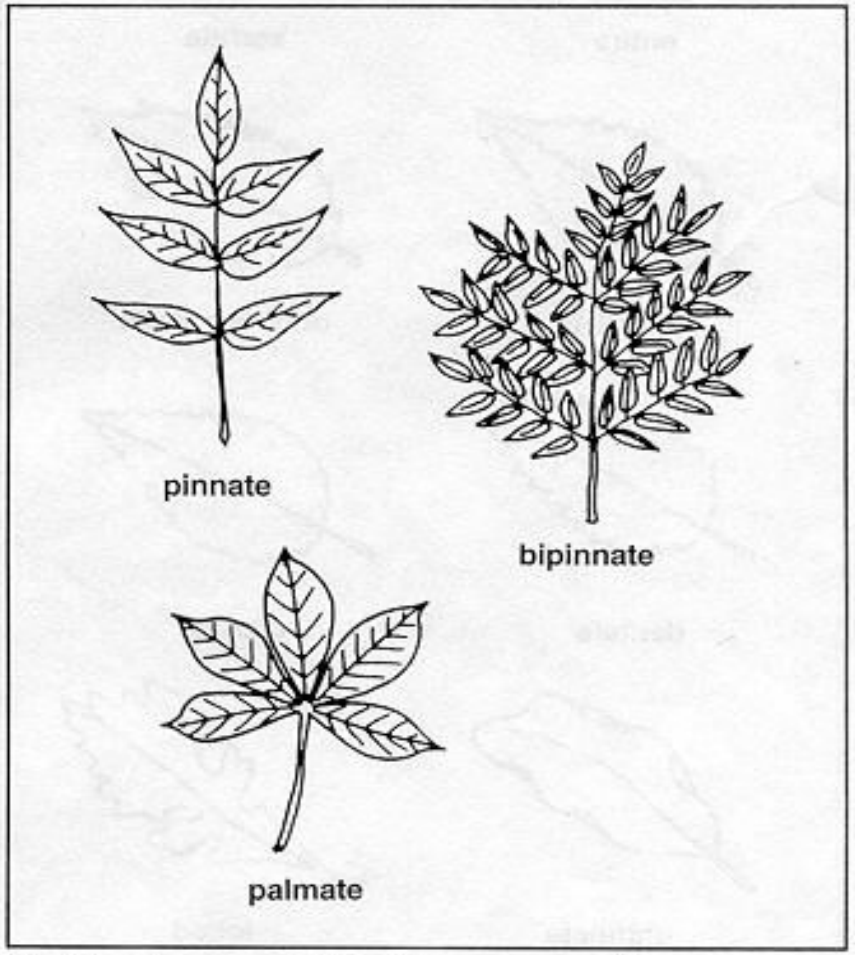


Fig. 2.5 Arrangement of leaflets on compound leaves.

Compound Leaf Types – cont'd

Pinnate (once) Bi-Pinnate (twice) Palmate

Leaf Bases & Apices

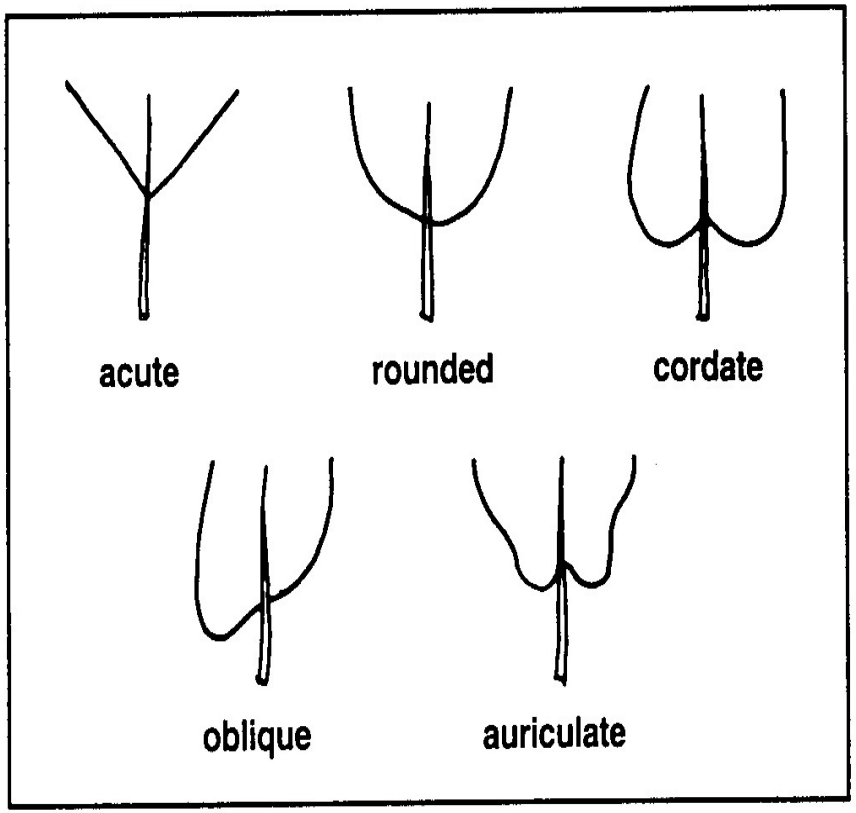


Fig. 2.6 Leaf bases.

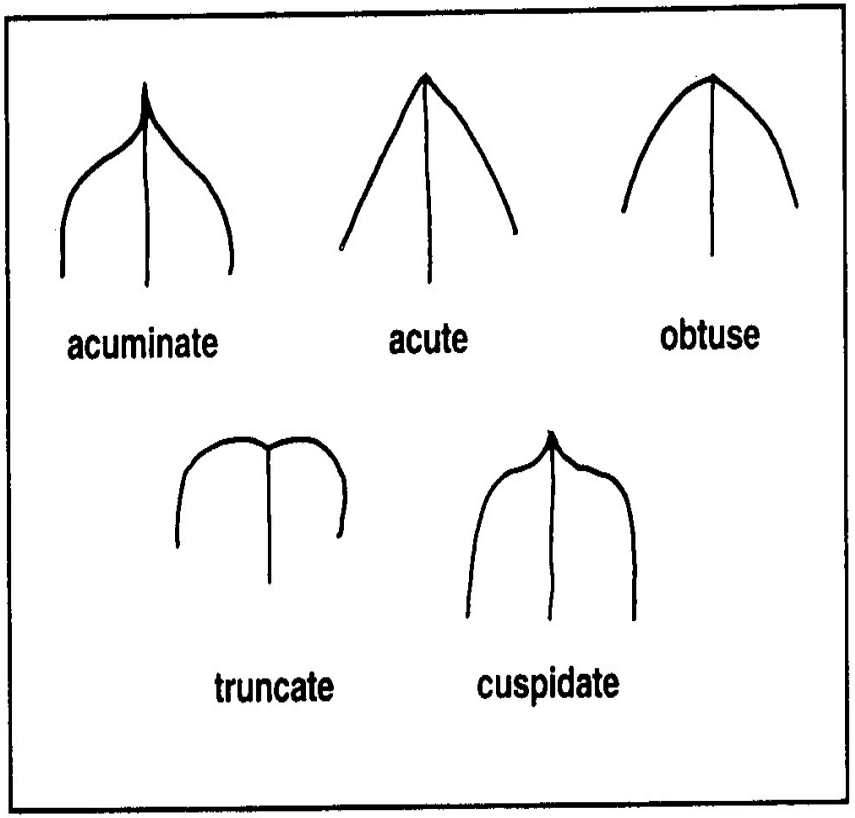


Fig. 2.8 Leaf apices.

Leaf Margins & Other Types

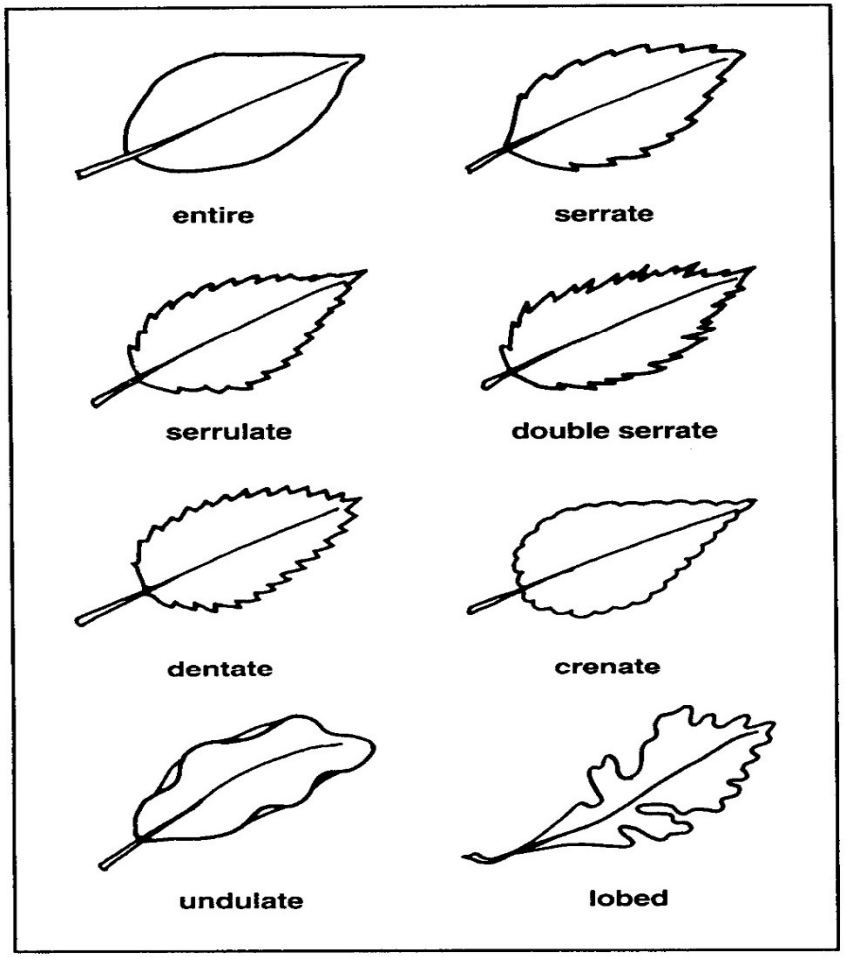


Fig. 2.7 Leaf margins.

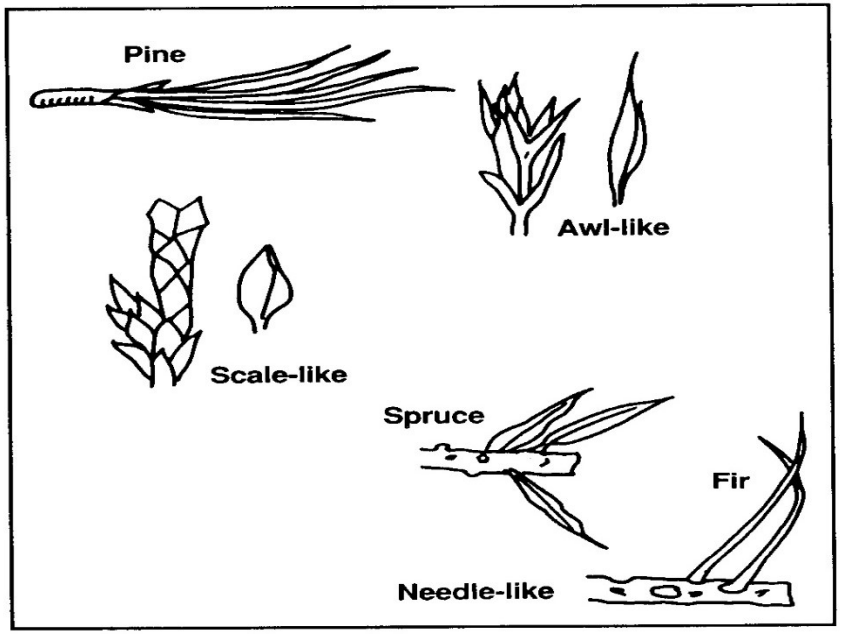
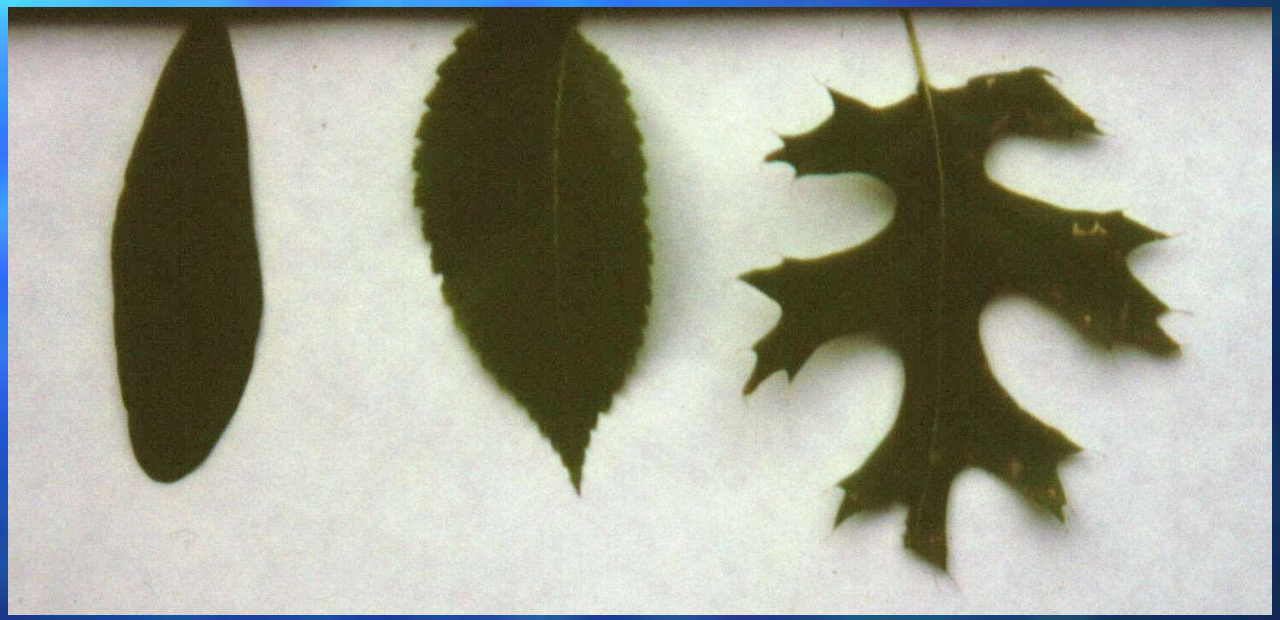


Fig. 2.9 Other foliage types.

Leaf Margins



Entire Serrated Lobed

LEAF SHAPES














Other ID Characteristics

- Form
  - Habitat
    - Bark

BARK












When all else fails….

White ash
Fraxinus americana

Opposite branching

To tell apart from Green Ash notice the shape of the leaf scar & the wing position on the seed

Green ash
Fraxinus pennsylvanica

Opposite branching

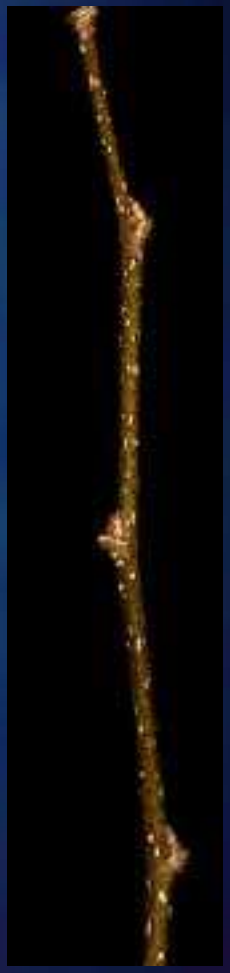
To tell apart from Green Ash notice the shape of the leaf scar & the wing position on the seed

Eastern cottonwood
Populus deltoides

American elm
Ulmus americana

Cedar elm
Ulmus crassifolia

Sugar hackberry
Celtis laevigata



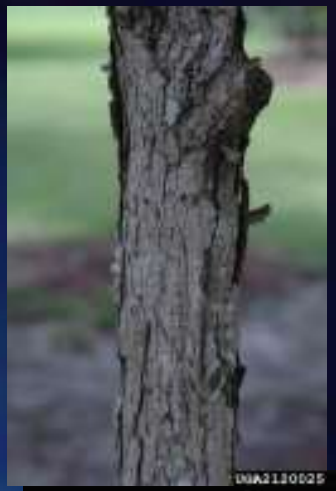
Mulberry
Morus spp.

There are native Red & Texas mulberries and naturalized White and Paper mulberries

Bur oak
Quercus macrocarpa

Post oak
Quercus stellata

Chinquapin oak
Quercus muehlenbergii



Live oak
Quercus virginiana (or *fusiformis*)

For the most part:

Q. *fusiformis* is native west of I-35 and Q. *virginiana* east of I-35

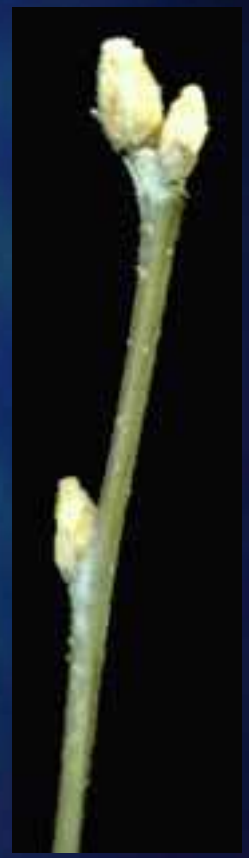
Shumard & Texas red oaks
Quercus shumardi & *buckleyii*

These species hybridize readily where their ranges overlap producing *many* trees with combined characteristics

Shumard acorns. Larger than TX and very flat cap

Lacey oak
Quercus laceyi

Callery pear
Pyrus calleryana



Remember this is a presentation on Tree ID, not Recommended Trees!

Eastern redbud
Cercis canadensis

In Central Texas there are also the Texas & Mexican redbuds

Eastern redcedar
Juniperus virginiana

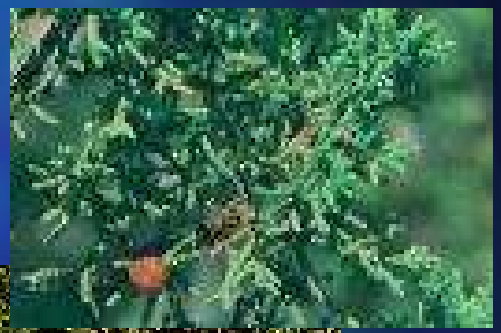
Usually has a single trunk

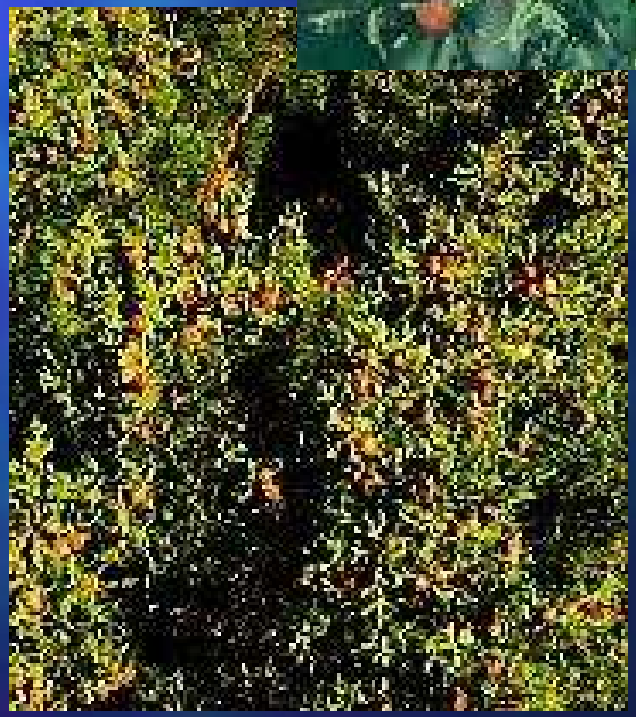
Ashe Juniper
Juniperus ashei

Usually multi-trunked

Pinchot Juniper
Juniperus pinchoti

Usually multi-trunked and always with Red fruit





Sycamore
Platanus occidentalis

In South & West Texas look for Mexican & Arizona sycamores

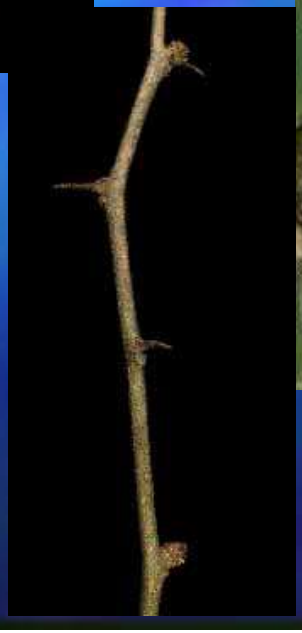
Tree of Heaven
Ailanthus altissima

Black walnut
Juglans nigra

Has "Chambered" pith

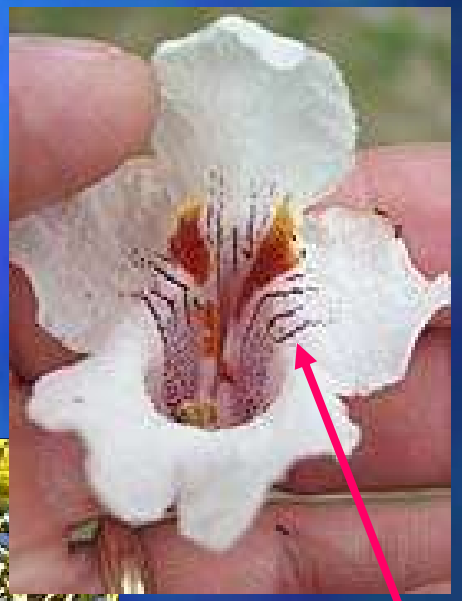
Pecan
Carya illinoinensis

Osage-orange
Maclura pomifera



Black willow
Salix nigra

Southern catalpa
Catalpa bignonioides



Northern catalpa does not have these purple lines

Whorled

Crepe myrtle
Lagerstroemia indica

Sweetgum
Liquidambar styraciflua

Southern magnolia
Magnolia grandiflora

Afghan (Eldarica) pine
Pinus eldarica

2 needle pine

Branches to ground

Japanese black pine
Pinus thunbergi

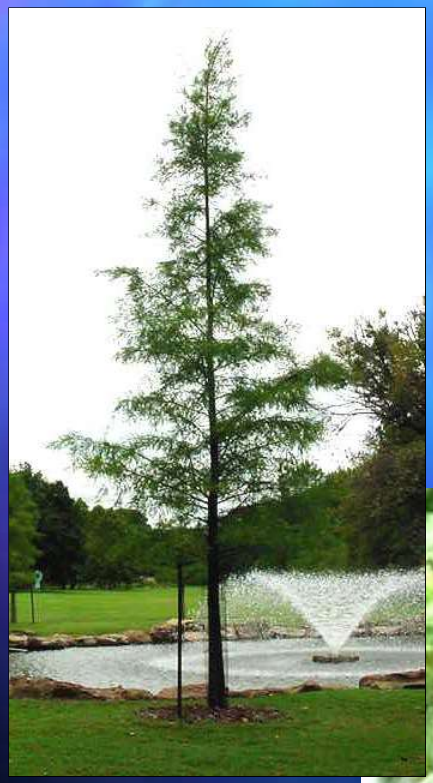
Asymetrical form

2 needle pine

Long "candles" (buds)

Honey Mesquite
Prosopis glandulosa

Baldcypress
Taxodium distichum

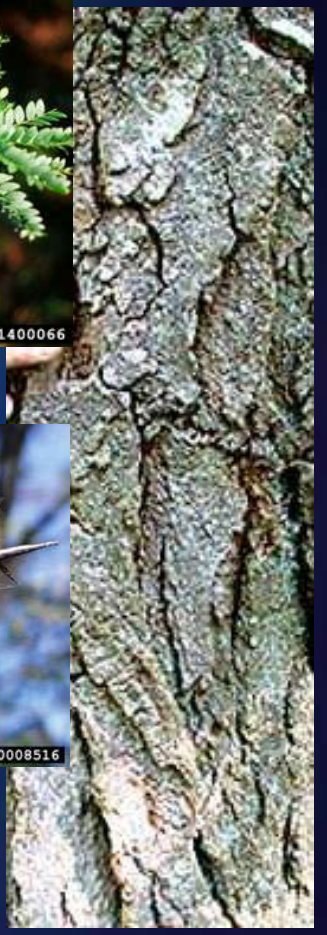


River birch
Betula nigra

Ginkgo
Ginkgo biloba

Golden raintree
Koelreuteria paniculata

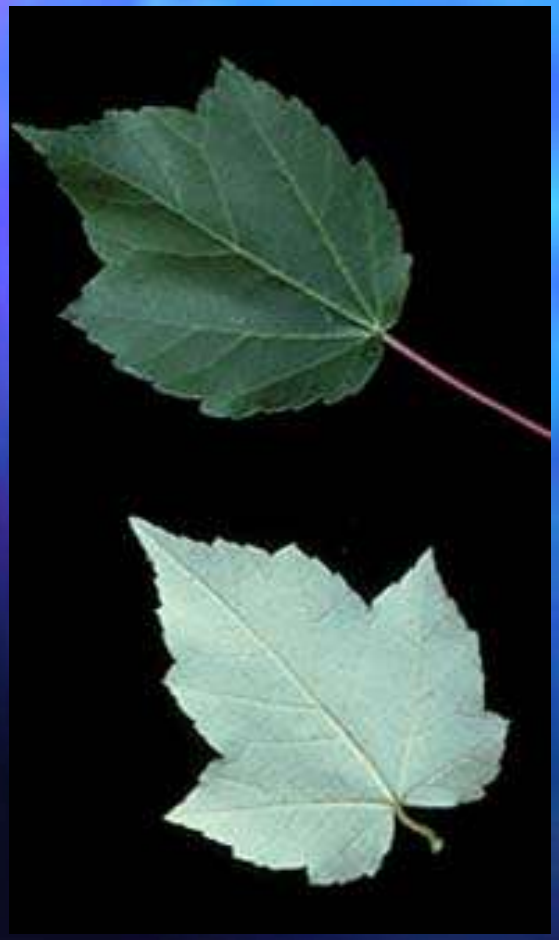
Honeylocust
Gleditsia triacanthos



Boxelder maple
Acer negundo

Opposite Branching

Red maple
Acer rubrum



Opposite

Silver maple
Acer saccharinum

Opposite

Western soapberry

Sapindus saponaria var. drummondii