



IDENTIFYING OUR NATIVE NORTH TEXAS TREES



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NPSOT Presentation
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Trees of North Texas

KEY TO THE BROAD-LEAVED TREES:



1. Are the leaves SIMPLE or COMPOUND?
 A leaf is **SIMPLE** if the blade is a single unit, and **COMPOUND** if it is made up of two or more discrete leaflets. **HINT:** Each leaf, whether simple or compound, has a **bud at its base** (on the twig). There is no bud at the base of a leaflet.

- **SIMPLE:** Go to **2** 
- **COMPOUND:** Go to **3** 

2 How are the SIMPLE leaves attached?

- **ALTERNATELY: GROUP A**
Simple leaves, alternately attached 
- **OPPOSITELY: GROUP C**
Simple leaves, oppositely attached 

3 How are the COMPOUND leaves attached?

- **ALTERNATELY: GROUP B**
Compound leaves, alternately attached 
- **OPPOSITELY: GROUP D**
Compound leaves, oppositely attached 

Trees of North Texas

KEY TO THE BROAD-LEAVED TREES:

GROUP A: SIMPLE LEAVES, ALTERNATELY ATTACHED

ELM / HACKBERRY FAMILY
 Key Identifier: Asymmetrical leaf base
 SUGAR-HACKBERRY corky bark, few or no teeth, leaves have 3 basal veins

AMERICAN ELM large leaves, few forked secondary veins; a bark flake will show alternating brown and cream colored layers

CEDAR ELM small leaves, stiff and rough textured; rounded tips; flowers/fruits in the fall, often has corky wings on branches

"CHINESE ELM (LACEBARK ELM) peeling bark with orange-colored bark underneath; flowers/fruits in the fall

SLIPPERY ELM large leaves, usually several forked secondary veins per side; very rough on both surfaces

WINGED ELM small leaves, pointed tips, flowers/seeds in the spring, often has corky wings on branches

***indicates introduced species**

GROUP B: COMPOUND LEAVES, ALTERNATELY ATTACHED

ASH FAMILY
 GREEN ASH very short or winged petiole leaflets, opposite to venate leaflets

TEXAS ASH venate about 1" long, rounded, weak ends where petiole begins, often has 5 leaflets

WHITE ASH venate similar to Texas Ash, but larger; often has 7 leaflets

SOAPBERRY 7-19 leaves with smooth margins and pointed tips; mature berries translucent

GROUP C: SIMPLE LEAVES, OPPOSITELY ATTACHED

BLACK WALNUT 15-25 leaflets, leaf base often broad or ovate

"CHINESE BERRY" large compound leaves, leaves mostly toothed or serrated

"CHINESE PISTACHE" leaves mostly serrated, leaflets mostly serrated

EVIE'S NECKLACE 9-15 oval leaflets, but hanging in "string of beads"

HERCULES CLUB bark has corky out growths, leaflets with short veins, leaflets often have 6 veins

HONEYLOCUST large thorns on stems; leaves once or twice compound; fruit a dark brown pod, 10-18" long

MESQUITE compound leaf branches into two parts, twigs and branches armed with stout, straight thorns up to 2" long

PECAN 11-17 slightly curved leaflets with small teeth; leaf has a large terminal leaflet

SHADY OAK leaves alternate, alternate to venate leaflets

GROUP D: COMPOUND LEAVES, OPPOSITELY ATTACHED

SOAPBERRY 7-19 leaves with smooth margins and pointed tips; mature berries translucent

GROUP E: SIMPLE LEAVES, ALTERNATELY ATTACHED

AMERICAN ELM large leaves, few forked secondary veins; a bark flake will show alternating brown and cream colored layers

CEDAR ELM small leaves, stiff and rough textured; rounded tips; flowers/fruits in the fall, often has corky wings on branches

"CHINESE ELM (LACEBARK ELM) peeling bark with orange-colored bark underneath; flowers/fruits in the fall

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GROUP F: SIMPLE LEAVES, ALTERNATELY ATTACHED

AMERICAN ELM large leaves, few forked secondary veins; a bark flake will show alternating brown and cream colored layers

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"CHINESE ELM (LACEBARK ELM) peeling bark with orange-colored bark underneath; flowers/fruits in the fall

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***indicates introduced species**

45 COMMON TREES OF NORTH CENTRAL TEXAS



Trees of North Texas

Key to the Broadleaf Trees



FIRST STEPS IN TREE ID

- Does it have broad leaves?

Broad leaves



Linear, needle-like, scale-like





Eastern Redcedar

Juniperus virginiana

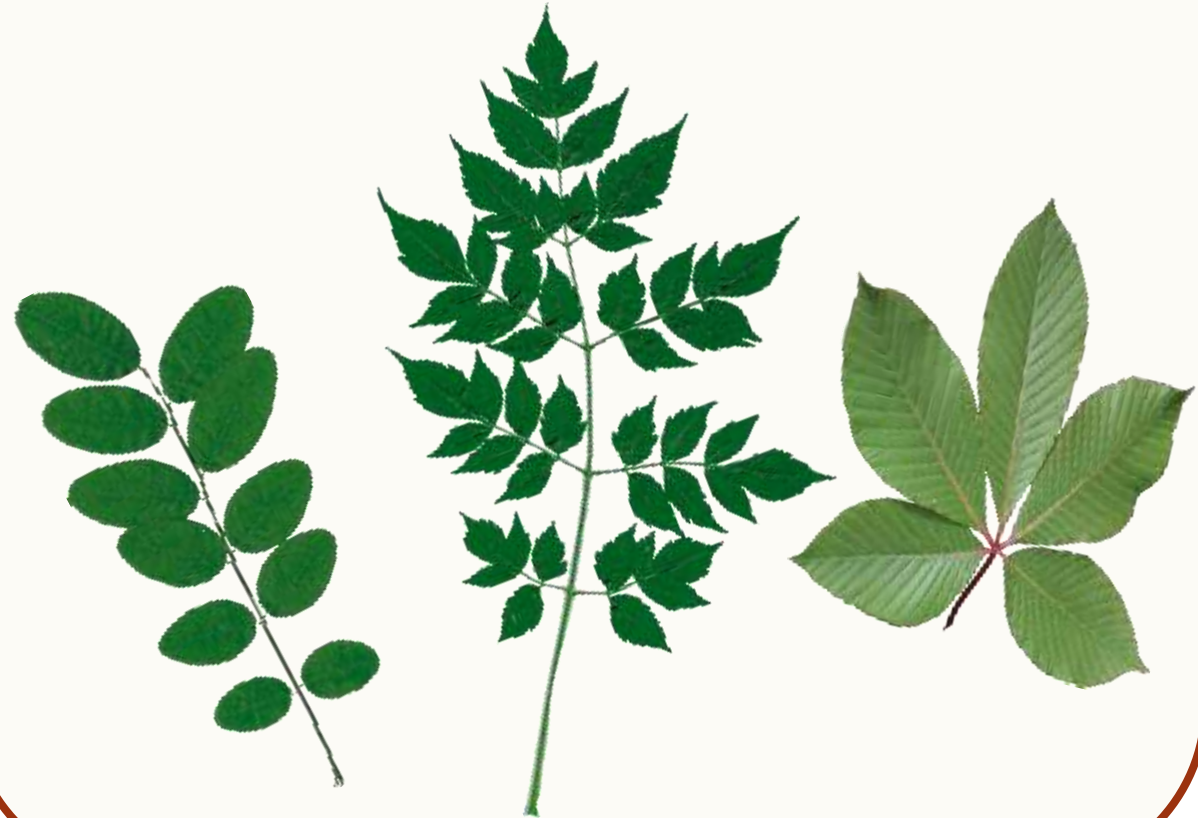


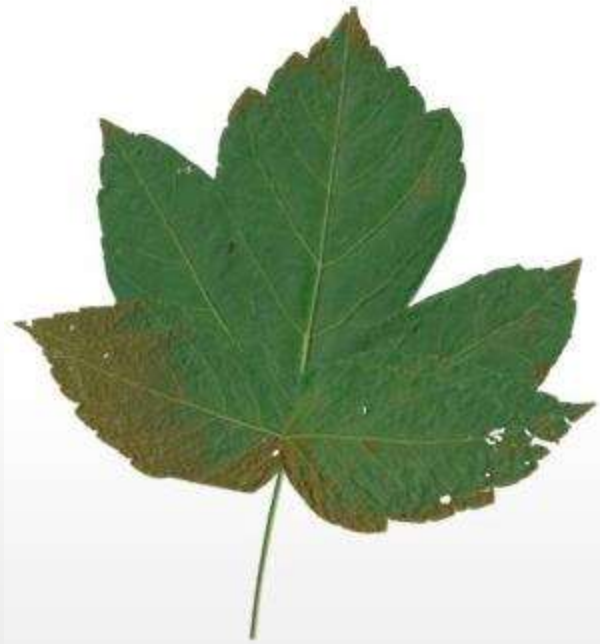
ARE THE LEAVES SIMPLE OR COMPOUND?

Simple Leaves



Compound Leaves





Simple, lobed



**Simple, deeply
lobed**

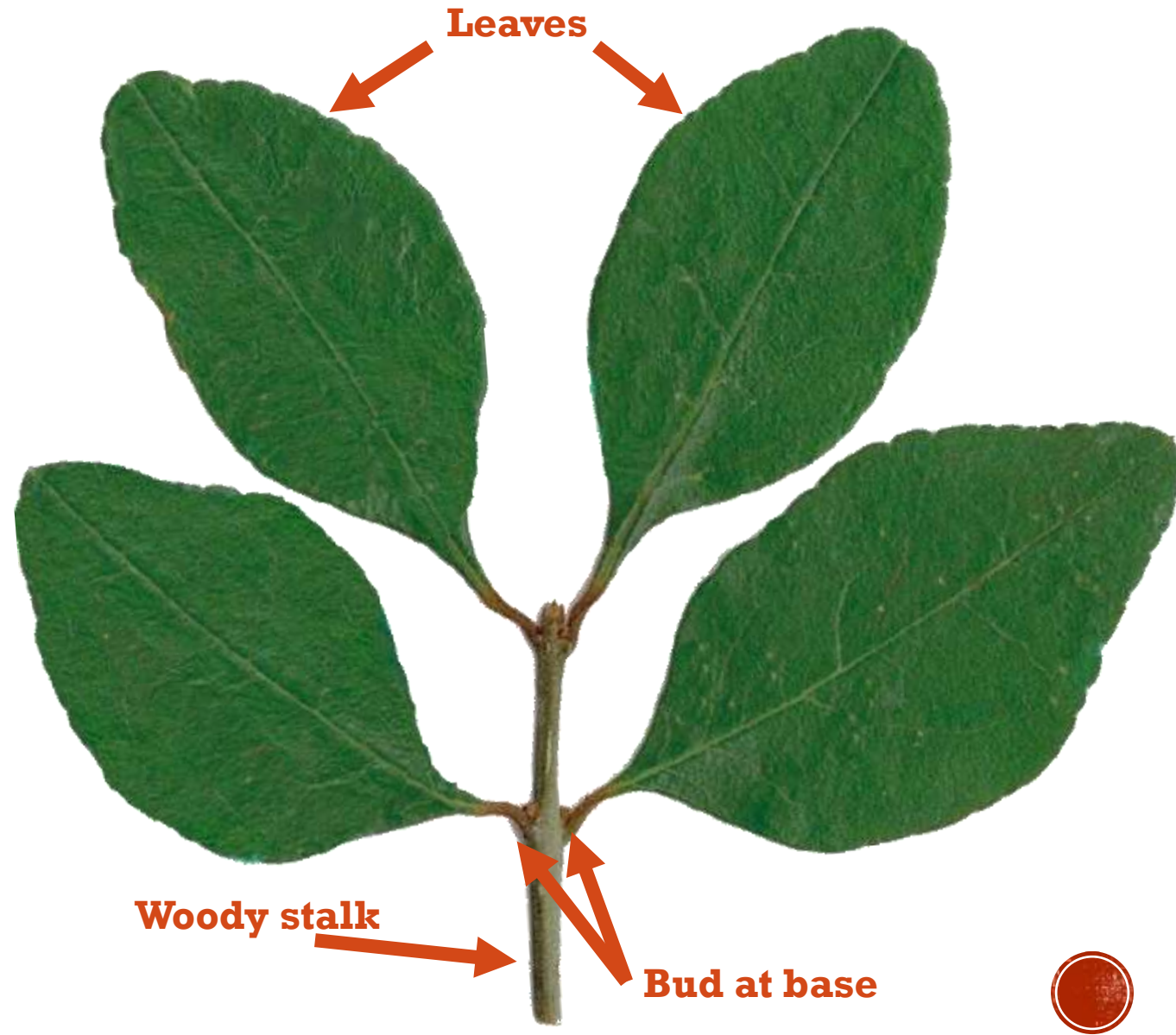
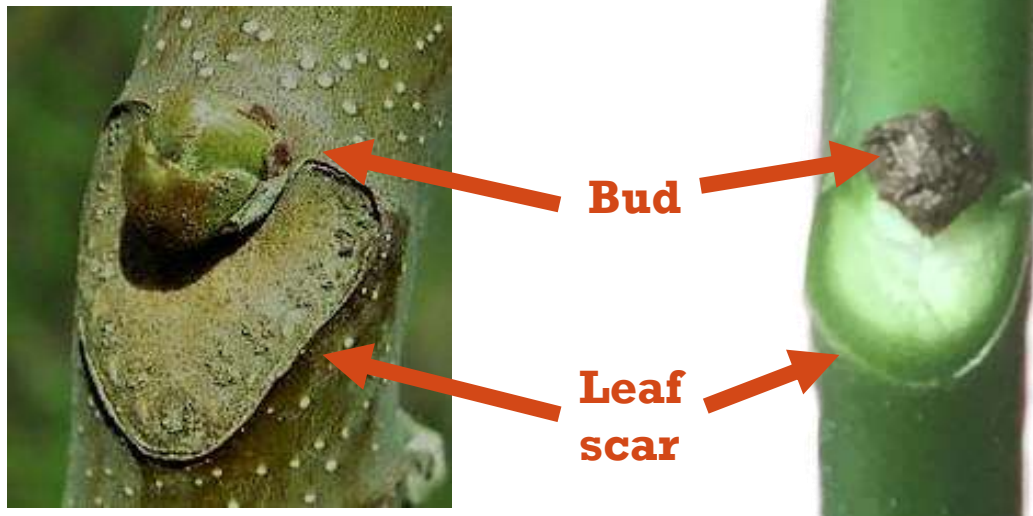


Compound

SIMPLE LEAVES

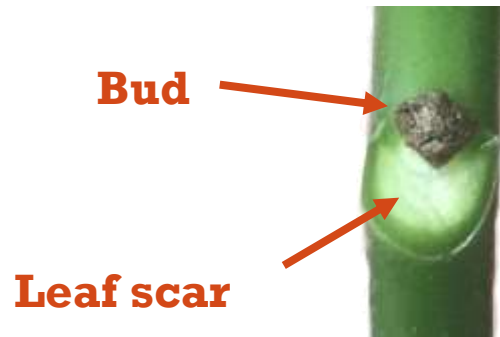
- Leaves grow directly from a woody stalk (the twig)
- Bud at the base of each leaf

LEAF SCAR ANATOMY

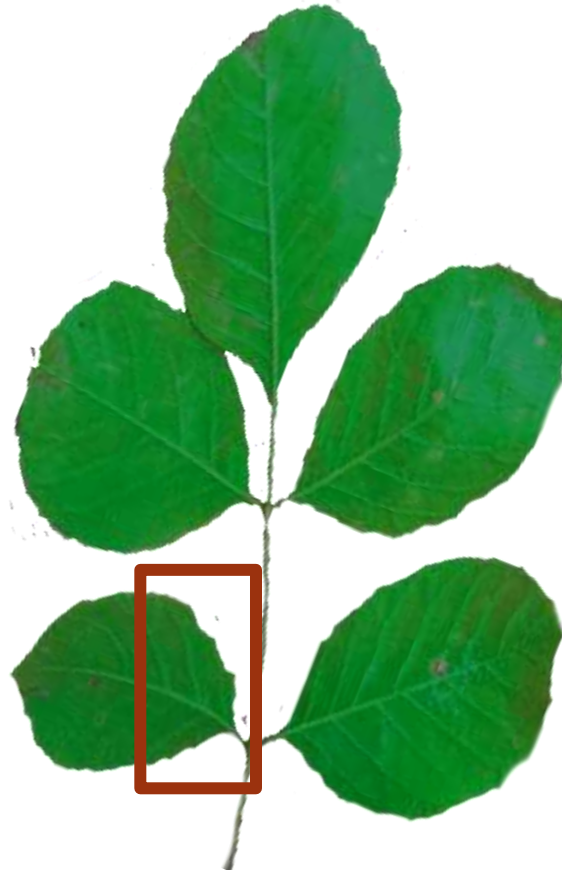


COMPOUND LEAVES

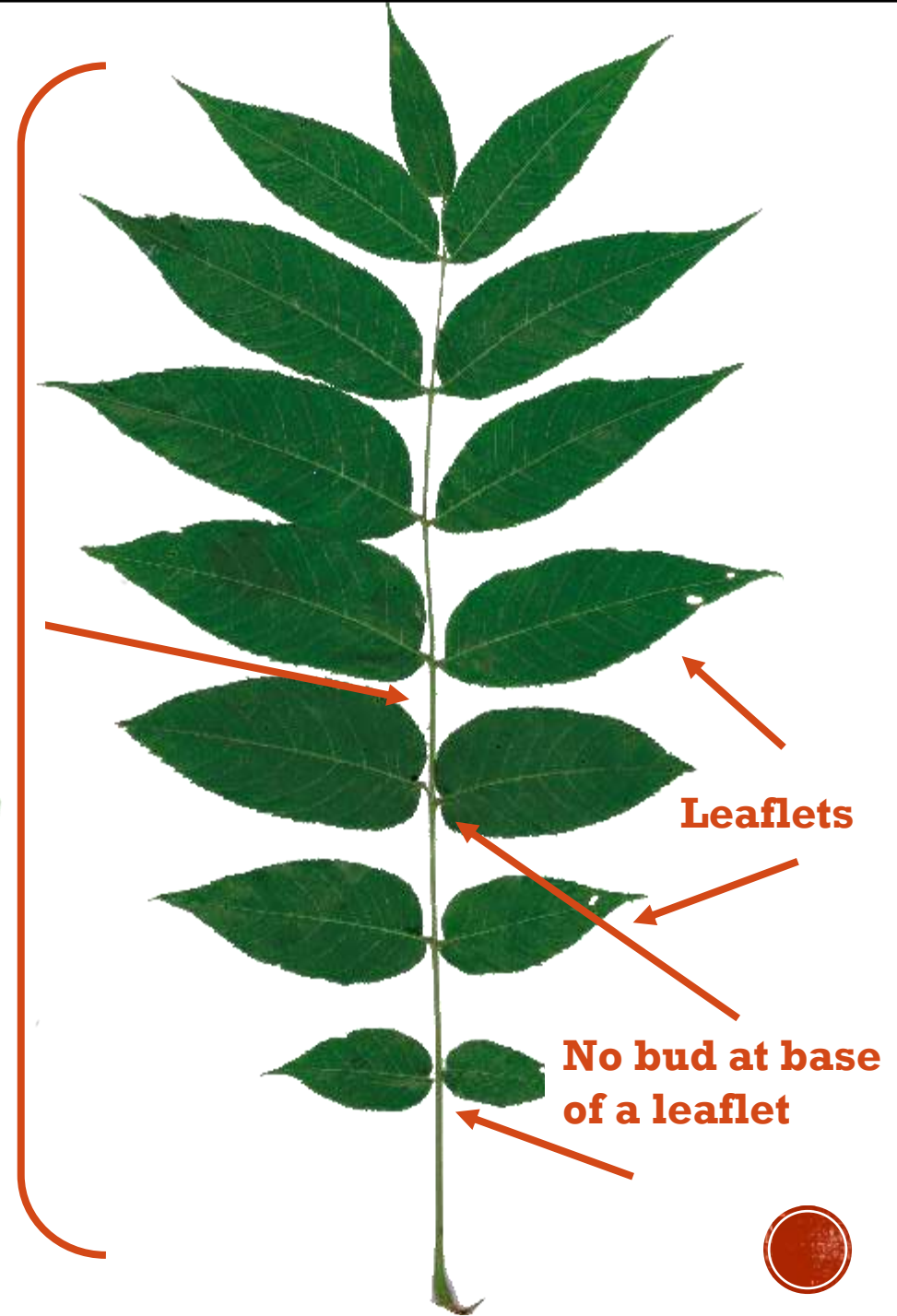
- Leaf is made up of leaflets growing from a non-woody stalk
- **No** bud at the base of a leaflet



No
Leaf
scar



Leaf



**LOOK FOR A
BUD AT THE
BASE OF EACH
TRUE LEAF...**

...BUT!

**watch out of the
“hidden bud!”**



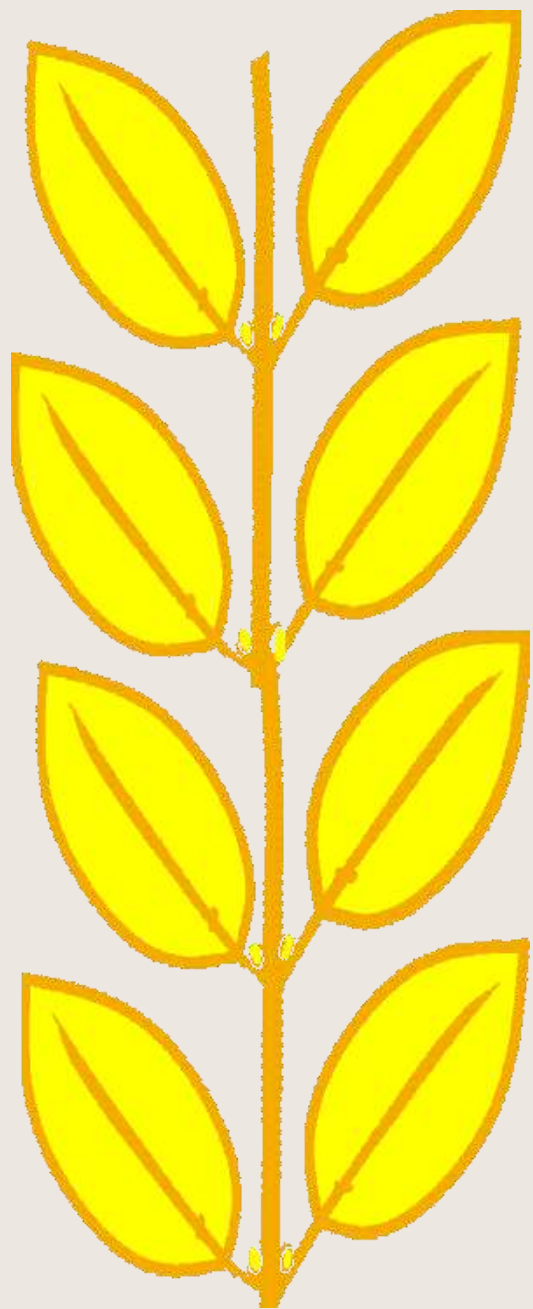
Hidden Bud



NEXT QUESTION...

Once you've determined compound or simple leaves, you need to answer one more question...



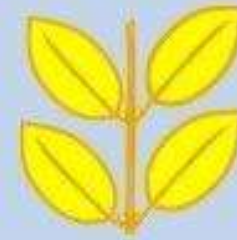


2 How are the SIMPLE leaves attached?

- ALTERNATELY: **GROUP A**
Simple leaves, alternately attached



- OPPOSITELY: **GROUP C**
Simple leaves, oppositely attached

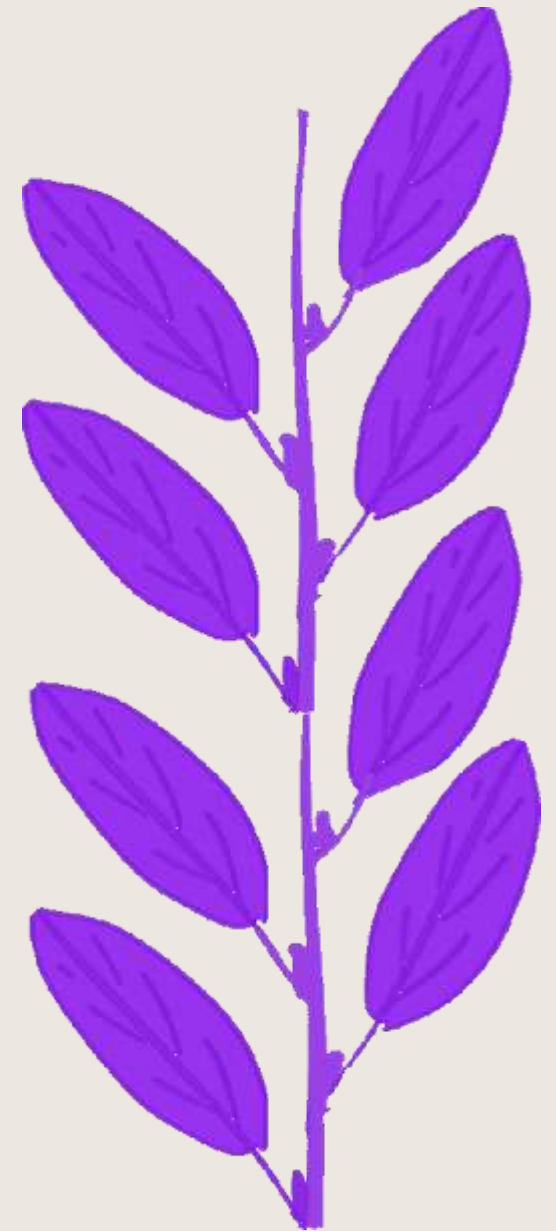


3 How are the COMPOUND leaves attached?

- ALTERNATELY: **GROUP B**
Compound leaves, alternately attached



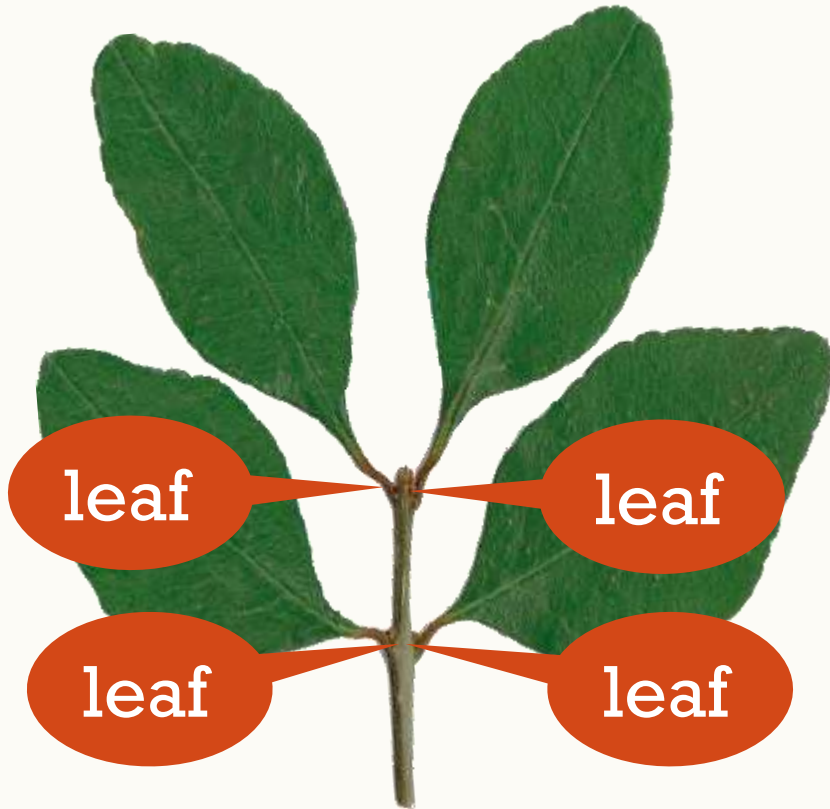
- OPPOSITELY: **GROUP D**
Compound leaves, oppositely attached



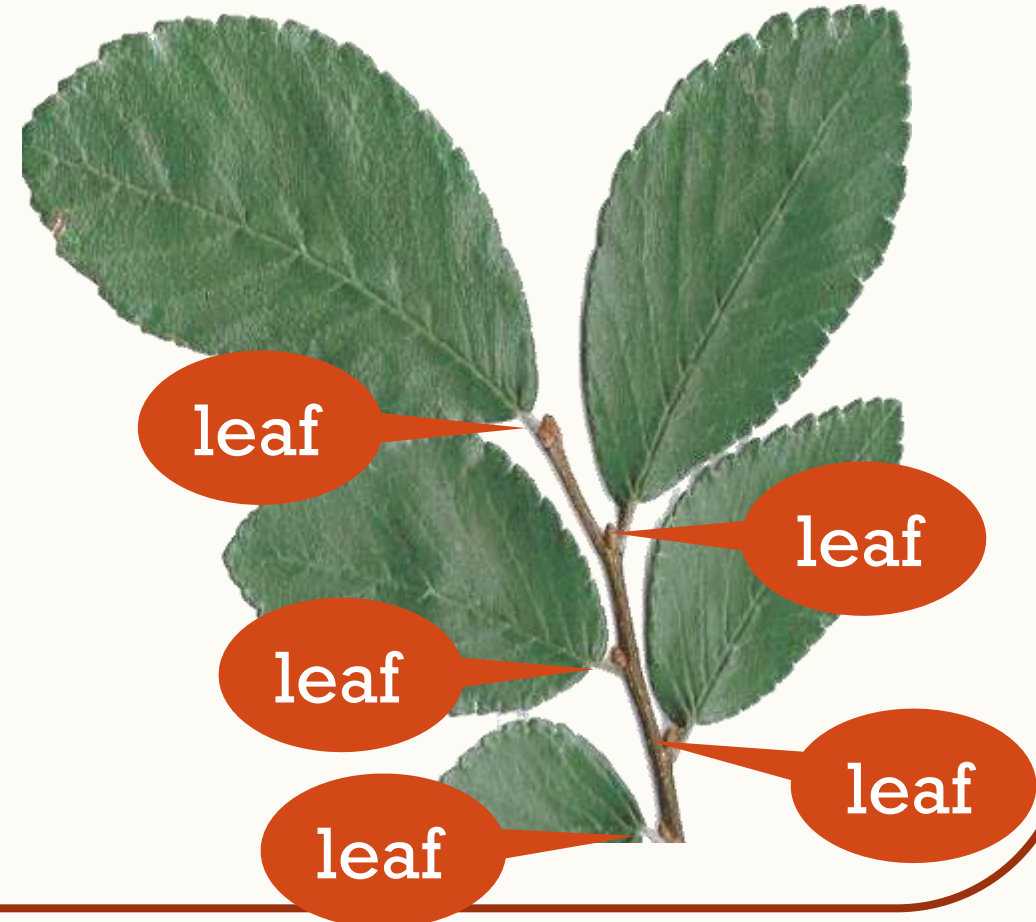


HOW ARE THE LEAVES ATTACHED?

Opposite Leaves



Alternate Leaves





WHAT KIND OF LEAF ATTACHMENT?

■ Opposite or Alternate?

Opposite Leaves

20%

of common tree species
in NCTx have
OPPOSITE
leaf attachment

Alternate Leaves

80%

of common tree species
in NCTx have
ALTERNATE
leaf attachment

DAMPER

*Acronym to remember the trees with opposite leaves

D is for **DOGWOOD**

A is for **ASH**

M is for **MAPLE**

P is for **PRIVET**

E is for **ELDERBERRY** and **ELBOWBUSH**

R is for **RUSTY BLACKHAW**



BROADLEAF TREES: FOUR MAIN GROUPS

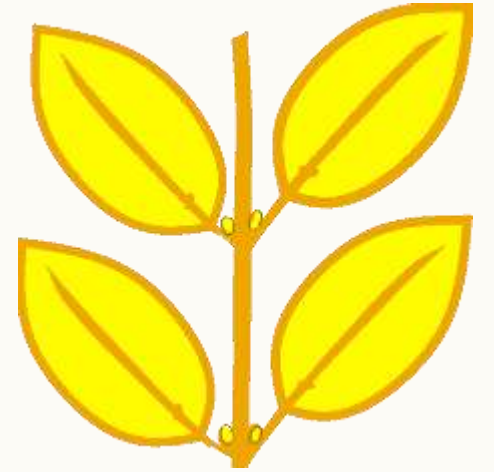
Simple Leaves,
Alternately
Attached

60%



Simple Leaves,
Oppositely
Attached

10%



Compound Leaves,
Alternately
Attached

20%



Compound Leaves,
Oppositely
Attached

10%





**Pecan or
Walnut???**

**Elm? Oak?
Hackberry??**

**Pistache or
Soapberry???**

Common Confusables



Tips for identifying some of our tricky trees



Trees of North Texas

KEY TO THE BROAD-LEAVED TREES

1. Are the leaves **BROAD-LEAVED** (leaf is **SIMPLE** or the leaf is a **single leaf** and **COMPOUND** is a **cluster** of two or more separate leaflets, each. Each leaf, whether simple or compound, has a **bud** at its base (or **terminal** there is no bud at the base of a leaf)?

• **MAPLE**: Foliage **2** 
• **COMPOUND**: Simple **3** 

2. How are the **SIMPLE** leaves attached?
• **ALTERNATELY**: **GROUP A**
Simple leaves, alternately attached

• **OPPOSITE**: **GROUP C**
Simple leaves, oppositely attached

3. How are the **COMPOUND** leaves attached?
• **ALTERNATELY**: **GROUP B**
Compound leaves, alternately attached

• **OPPOSITE**: **GROUP D**
Compound leaves, oppositely attached

GROUP B COMPOUND LEAVES, ALTERNATELY ATTACHED

BLACK WALNUT 15-23 leaflets, last leaflet often small or missing

* **CHINABERRY** twice-compound leaves, leaflets, coarsely toothed or lobed

* **CHINESE PISTACHE** leaves resemble soapberry, but have strong, peppery scent when crushed

EVE'S NECKLACE 9-15 oval leaflets, fruit hanging in "string of beads"

HERCULES CLUB bark has corky outgrowths tipped with short thorns, leaflets often have prickles

HONEYLOCUST large thorns on thorns; leaves once or twice compound; fruit a dark brown pod, 10-18" long

MESQUITE compound leaf branches into two parts; twigs and branches armed with stout, straight thorns up to 2' long.

PECAN 11-17 slightly curved leaflets with small teeth; leaf has a large terminal leaflet

SOAPBERRY 7-19 leaflets with smooth margins and pointed tip; mature berries translucent

GROUP C SIMPLE LEAVES, OPPOSITE ATTACHED

ROSE-LEAVED DOGWOOD reddish twigs, smooth leaf margins, veins curve towards tip, sometimes considered shrub

PRIVET small leaves with waxy and wedge-shaped base

* **GLOSSY PRIVET** large leaves, very glossy

REDWOOD PRIVET small leaves, almost no stem, and a tapering base

RUSTY BLACKBERRY leaves finely toothed, on reddish petiole (stem)

GROUP D COMPOUND LEAVES, OPPOSITE ATTACHED

ASH FAMILY
GREEN ASH very short or winged stalk on leaflets; samara is needle-like

FRASER ASH samara about 1" long, rounded; seed ends where wing begins, often has 5 leaflets.

WHITE ASH samara similar to Texas Ash, but larger; often has 7 leaflets.

MAPLE FAMILY
BOXELDER MAPLE 3-5 leaflets with irregular lobes and/or teeth.



**GROUP B
COMPOUND LEAVES,
ALTERNATELY ATTACHED**



Chinaberry

(Melia azedarach)

- Native to Persia and SE Asia. Introduced to U.S. in 1830 as an ornamental tree.
- Produces lavender, sweet smelling flowers in spring.
- The flesh of the fruit/berry is edible for wildlife, but the seed is toxic.
- Birds can become intoxicated if they eat too many of the berries.
- Reproduces from root sprouts, and via bird-dispersed seeds.
- Can produce dense thickets.
- Top ten invasive in TX.



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Honey Locust (*Gleditsia triacanthos*)

Species is dioecious
Leaves are compound, alternate.
Trunk, branches, twigs have strong, sharp straight or
branches of thorns on thorns.
Fruit is a flat a twisted brown pod that contains a sweetish
pulp and dark brown seeds.

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Honey Mesquite (*Prosopis glandulosa*)

Leaves compound, alternate.

Range was extended by fencing, prevention of fires, and overgrazing, and cattle drives (cattle eat the fruits and drop seeds).

Hard to eradicate due to deep, wide root system and tree/seed resilience.

Wood is excellent as barbeque and fuel wood.

Flowers make an excellent honey.

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Eve's Necklace (*Sophora affinis*)

**Leaves are compound, alternate.
Fruit turns black in the fall and hangs like a string of beads.
Seed is toxic and not eaten by wildlife.
Can act like a vine in dense shade.**



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Hercules Club (*Zanthoxylum clava-herculis*)

Leaves are compound, alternate.

Species is dioecious.

Flowers in terminal panicles.

Also called “Toothache Tree” and Prickly Ash”.

Bark and leaves, when chewed, can numb your mouth. Settlers used as a toothache remedy.



Sumac (*Rhus spp.*)

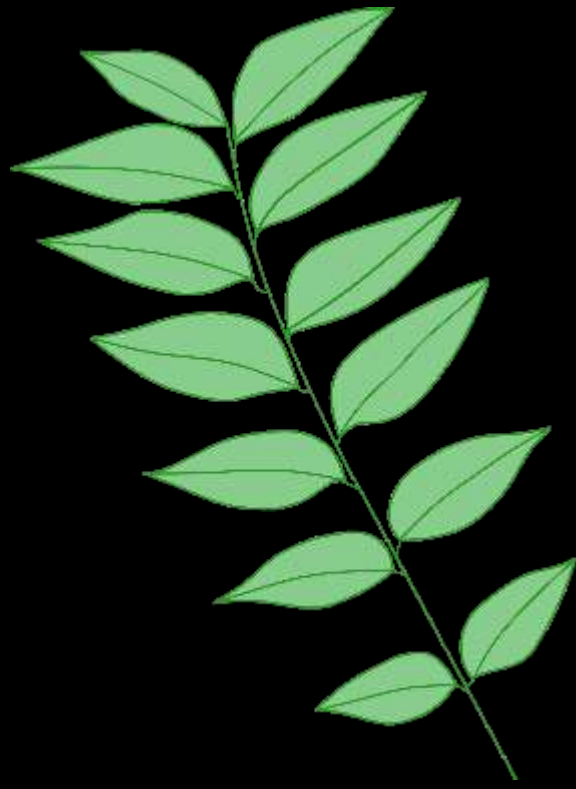
Leaves compound, alternate.

Sumacs are dioecious.

Berry like fruit grows in clusters and is important winter forage for wildlife.

Leaves turn brilliant red in the fall.

Found primarily along forest edges.



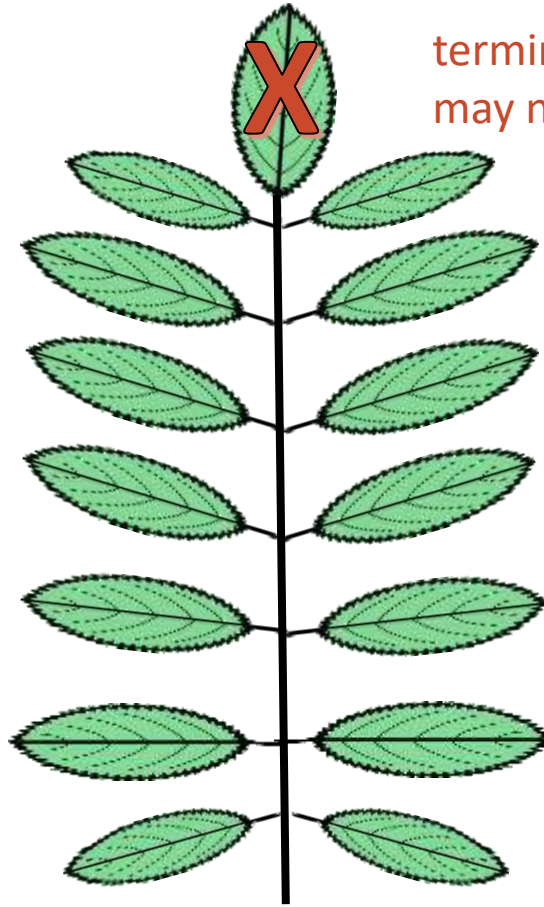
Pecan? Black Walnut?
Chinese Pistache? Soapberry?

Leaves that are:

- Alternately-attached
- Once pinnately-compound

Two with:

Finely-toothed
margins



terminal leaflet may or
may not be present



IS IT... PECAN

OR

BLACK WALNUT?



Compare the LEAVES: both finely toothed

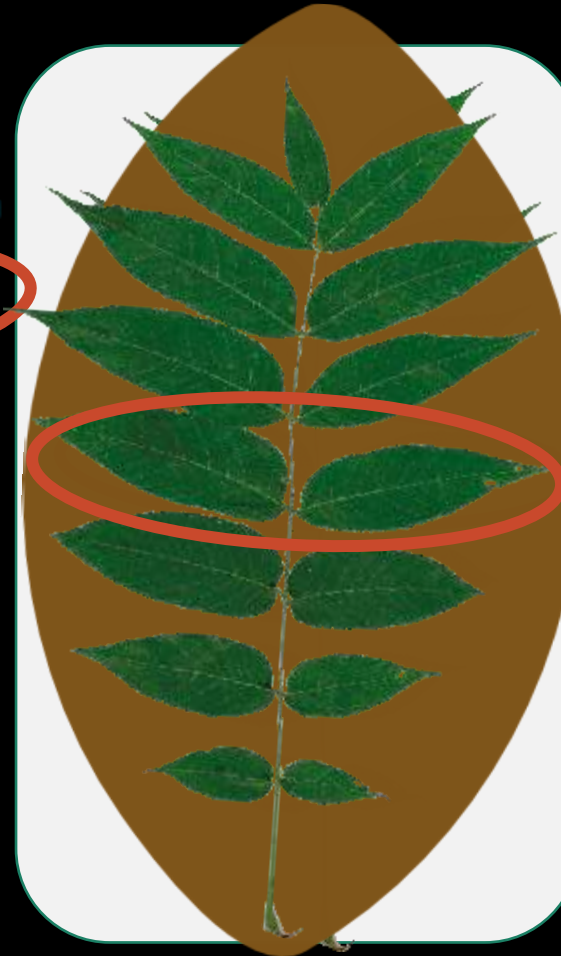
Pecan

- 9 to 15 leaflets, usually has a terminal leaflet
- 12 to 18 inches long.
- Leaflets are often curved (falcate)
- **Largest leaflets are near the END of the leaf**
- *(i.e. coffin shape)*



Black Walnut

- 10 to 24 leaflets (poorly formed or missing terminal leaflet)
- 12 to 24 inches long
- leaflets are ovate-lanceolate
- **Largest leaflets near the middle**
- *(i.e. football shaped)*



PECAN



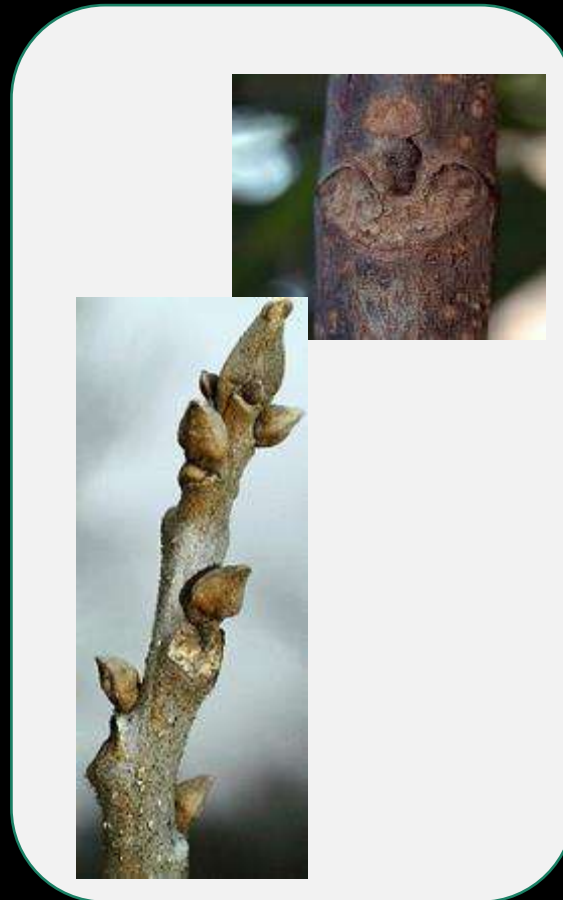
BLACK WALNUT



Compare the TWIGS

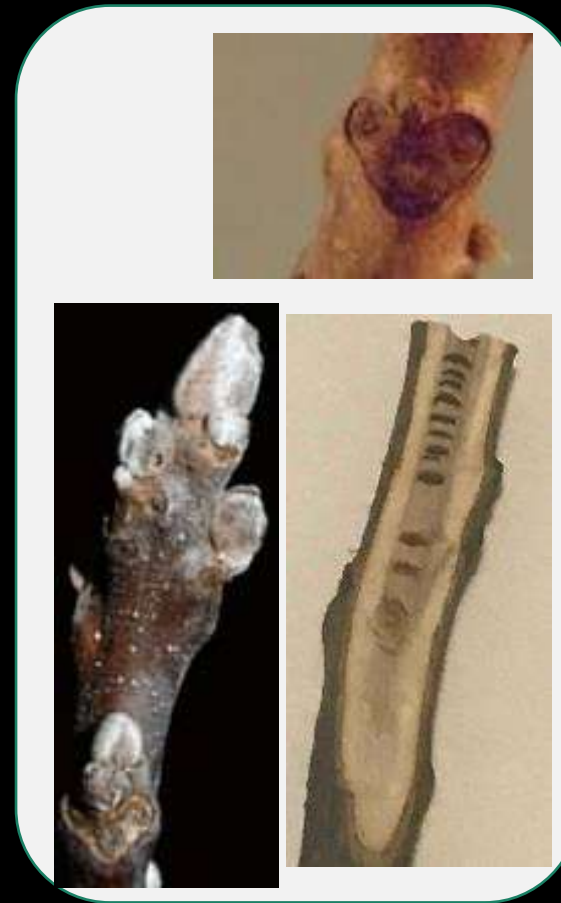
Pecan

- Moderately stout, light brown, fuzzy twigs
- Buds are yellowish and hairy
- Leaf scars large and three lobed, usually not resembling face



Black Walnut

- Stout, brown twigs
- Buds are tan
- Leaf scars are 3-lobed, resembling a "monkey face".



❖ A buff-colored chambered pith

Compare the BARK

Pecan

Smooth when young, becoming narrowly fissured into thin broken strips, often scaly.



Black Walnut

Brown on surface, darker brown when cut, ridged and furrowed with a rough diamond pattern.



Compare the FRUIT

Pecan

- Large, oblong, splitting into 4 parts
- 1 1/2 to 2 inches long, husks are thin, usually occur in clusters on trees
- mature in fall



Black Walnut

- Round,
- 2 to 2 1/2 inches across, with a thick, green indehiscent husk.
- The husk contains an irregularly furrowed, hard nut that contains sweet, oily meat (edible)
- mature in late summer to fall.

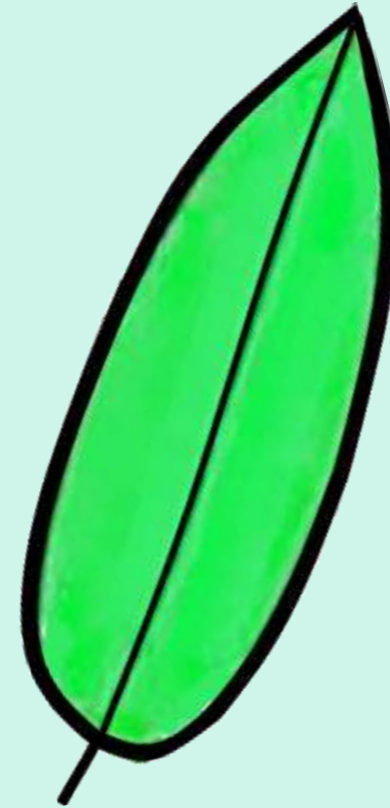
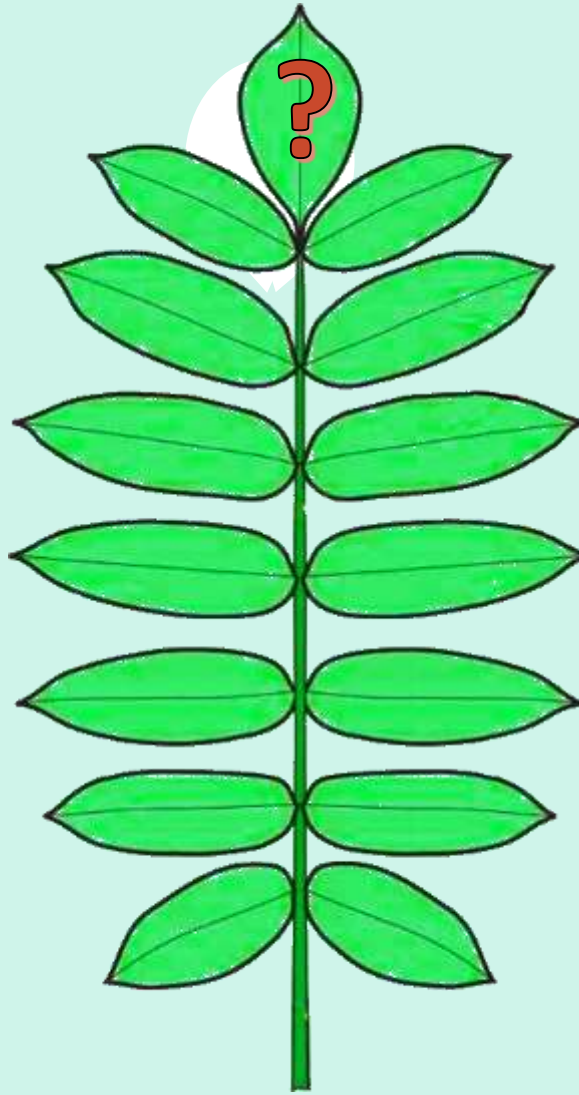


Leaves that are:

- Alternately-attached
- Once pinnately-compound

Two with:

Smooth margins



IS IT SOAPBERRY OR PISTACHE?

(BOTH SPECIES ARE DIOECIOUS)

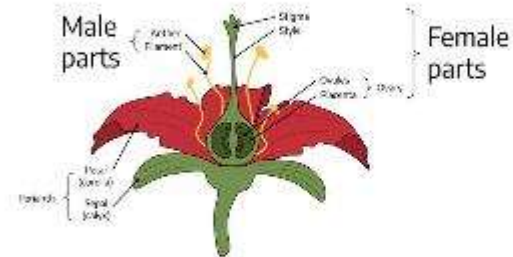


MONOECIOUS AND DIOECIOUS TREES

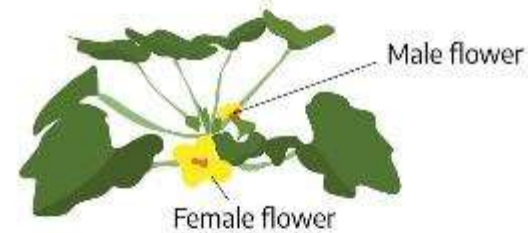
Monoecious vs. dioecious

Monoecious plants have male flowers and female flowers in separate structures on the same plant.

Flowers can be **perfect**, with male and female parts in the same flower



Or **imperfect**, with separate male and female flowers



Dioecious plants have male and female flowers on different plants, so the entire plant is either male or female.



MONOECIOUS AND DIOECIOUS TREES

Is it **TWO** kinds
of flower on one
tree???

Or is it **TWO** trees,
each with one kind
of flower???



MONOECIOUS AND DIOECIOUS TREES

- Monoecious = “one house”



- Dioecious = “two (separate) houses”



Compare the LEAVES

Western Soapberry

- Leaflets often asymmetrical
- Leaflets alternate on the rachis



Chinese Pistache

- Leaflets closer to opposite on the rachis
- Often no terminal leaflet



ODOR:
important clue!!!

Compare the GROWTH HABIT

Western Soapberry



Chinese Pistache



Compare the FRUIT/FLOWERS

(BOTH SPECIES ARE DIOECIOUS)

Western Soapberry



Chinese Pistache



Compare the FRUIT/FLOWERS

(BOTH SPECIES ARE DIOECIOUS)

Western Soapberry



Chinese Pistache



Compare the BARK

Western Soapberry



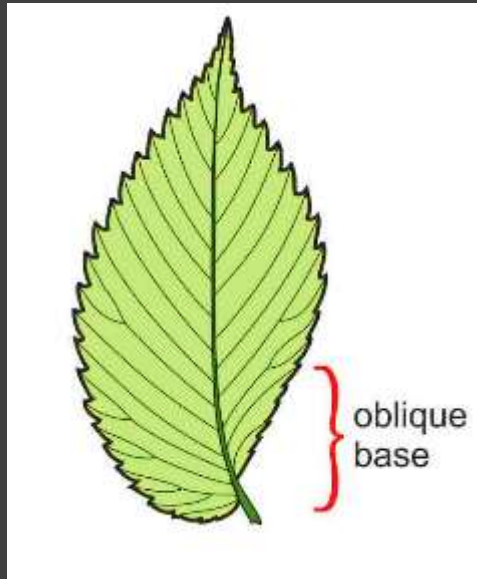
Chinese Pistache



Elm/Hackberry Family

- CLUES TO ID:

Asymmetrical leaf base



GROUP A
SIMPLE LEAVES,
ALTERNATELY ATTACHED

ELM / HACKBERRY FAMILY
Key Identifier: Asymmetrical leaf base

SUGAR HACKBERRY corky bark, few or no teeth, leaves have 3 basal veins

AMERICAN ELM large leaves, few forked secondary veins; a bark flake will show alternating brown and cream-colored layers

CEDAR ELM small leaves, stiff and rough textured; rounded tips, flowers/fruits in the fall, often has corky wings on branches

***CHINESE ELM (LACEBARK ELM)** peeling bark with orange-colored bark underneath, flowers/ fruits in the fall

SLIPPERY ELM large leaves, usually several forked secondary veins per side; very rough on both surfaces

WINGED ELM small leaves, pointed tips, flowers/seeds in the spring, often has corky wings on branches.

** indicates introduced species*



Is it an elm or a hackberry?

Both have leaves with asymmetrical bases

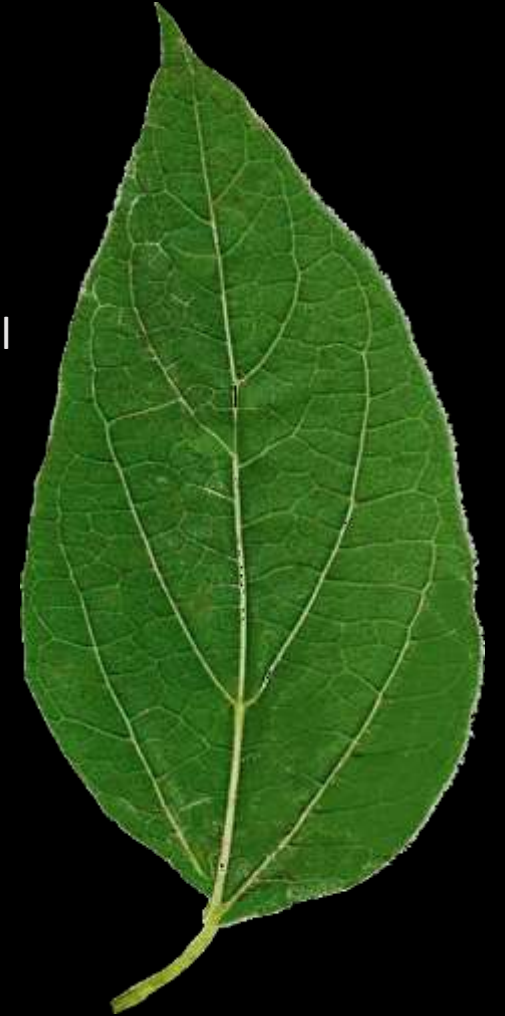
Elms have

- **Pinnate venation** a central main vein with secondary veins coming from it
- Double-toothed margins



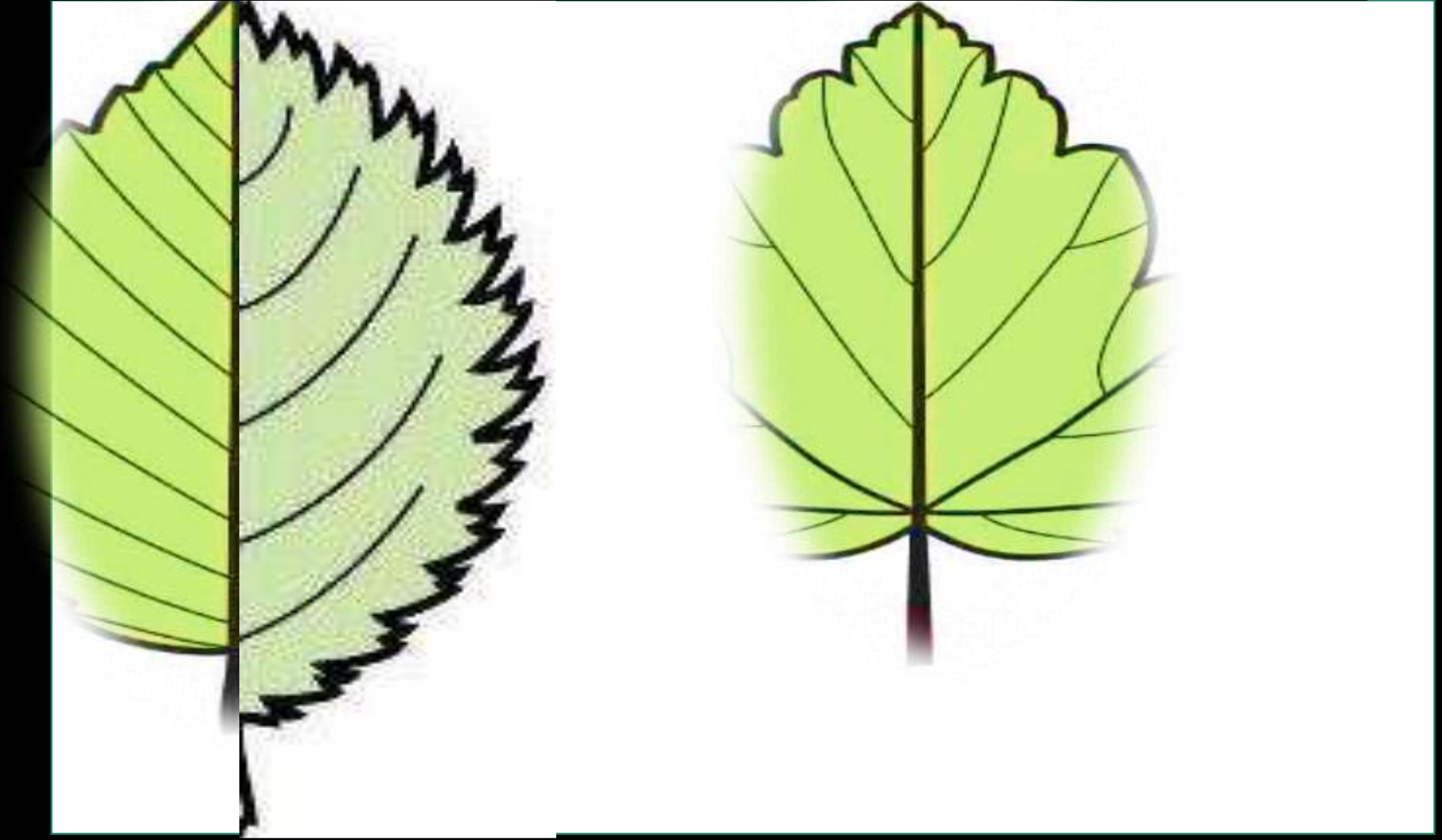
Sugar-Hackberries

- **Palmate venation** (Three basal veins)
- Usually have a distinctive bark, but not always
- The leaf margins are variable, smooth to irregularly toothed



Is it an elm or a hackberry?

Elms have pinnate (feather) venation and double toothed margins



NATIVE ELMS WITH LARGE LEAVES

Is it Slippery Elm or American Elm?



Compare the LEAVES

Slippery Elm

- a wide shape
- Often folds upward along central vein
- More than 2 forked secondary veins per side
- Fuzz in the axils on the underside of the leaf



American Elm

- Only 1-2 forked secondary veins per side
- In NcTX, much more common

IS IT AMERICAN ELM OR SLIPPERY ELM?

Compare the **BARK**

American Elm

- Color in layers (chocolate and vanilla)



Slippery Elm

- Uniform reddish brown
- Underbark is “slippery”



IS IT AMERICAN ELM OR SLIPPERY ELM?

Compare the SEEDS/FLOWERS

American Elm

- Flowers and fruit (samara) hang in loose fascicles
- Compare the samaras: cilia around the margins, but front and back surface hairless



Slippery Elm

- Flowers and fruit (samara) in tight bunches
- Compare the samaras: NO cilia around the margins, but fuzz on front and back surface, esp. over the seed



TWO ELMS WITH SMALL LEAVES AND CORKY WINGS ON THE TWIGS

- IS IT WINGED ELM OR CEDAR ELM?



Compare the LEAVES

Winged Elm

- Acuminate to acute leaf tip
- Leaf softer



Cedar Elm

- Sub-acute to obtuse leaf tip
- Leaf stiff, coarse



Compare the FRUIT

Samara: winged seed

Winged Elm

- Flowers and fruits in the spring
- NOTE: prefers sandy soil, so rare in Blackland Prairie area



Cedar Elm

- Flowers and fruits in the fall, with leaves



The Spring Flowering Elms

Cilia around the margins?

Fuzz on the front and back surface?

American Elm (*Ulmus americana*)



Slippery Elm (*U. rubra*)



Winged Elm (*U. alata*)



Siberian Elm (*U. pumila*)



The Spring Flowering Elms



American Elm

Samaras

- Have cilia around the margins
- Front and back surfaces are smooth
- Notched at the bottom

The Spring Flowering Elms



Slippery Elm

Samaras

- NO cilia around the margins
- Front and back surfaces have fuzz in the center
- No notch



The Spring Flowering Elms

Winged Elm

Samaras

- Have cilia around the margins
- Front and back surfaces fuzzy
- Elongated shape, two curved hooks at the bottom



The Spring Flowering Elms

Siberian Elm

Samaras

- NO cilia around the margins
- Front and back surfaces smooth, hairless
- Almost a circle, very little notch

The Spring Flowering Elms



American Elm
(*Ulmus americana*)

Slippery Elm (*U. rubra*)

Winged Elm (*U. alata*)

Siberian Elm (*U. pumila*)

Cilia around edge	Yes!	X	Yes!	X
Fuzz on front and back	X	Yes!	Yes!	X

RESOURCES

BOOKS:

A Field Guide to Texas Trees – Benny J. Simpson

**The Illustrated Book of Trees* – William Carey Grimm

**The Sibley Guide to Trees* – David Allen Sibley

Trees of Texas Field Guide – Stan Tekiela

Texas Trees – Howard Garrett

**Shinners & Mahler's Illustrated Flora Of North Central Texas* – Diggs, Lipscomb, et.al.

WEBSITES:

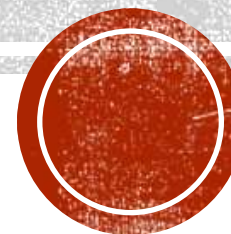
Texas A&M Forest Service "Trees of Texas"

* Stephen F. Austin University School of Forestry

* Virginia Tech Dendrology



THANK YOU!



GROUP B
COMPOUND LEAVES,
ALTERNATELY ATTACHED

BONUS
ROUND



**GROUP B
COMPOUND LEAVES,
ALTERNATELY ATTACHED**





1.



2.



3.



4.



5.



6.



7.



8.



9.



10.



1. Honey Mesquite



2. Soapberry



3. Hercules Club



4. Black Walnut



5. Honey Locust



6. Eve's Necklace



7. Chinese Pistache



8. Smooth Sumac



9. Pecan



10. Chinaberry