

Basic Plant Identification

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Contents

- Why do we ID?
- History of Taxonomy
- The Process of Identification
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Why ID?

The name of an organism gives all kinds of information about it:

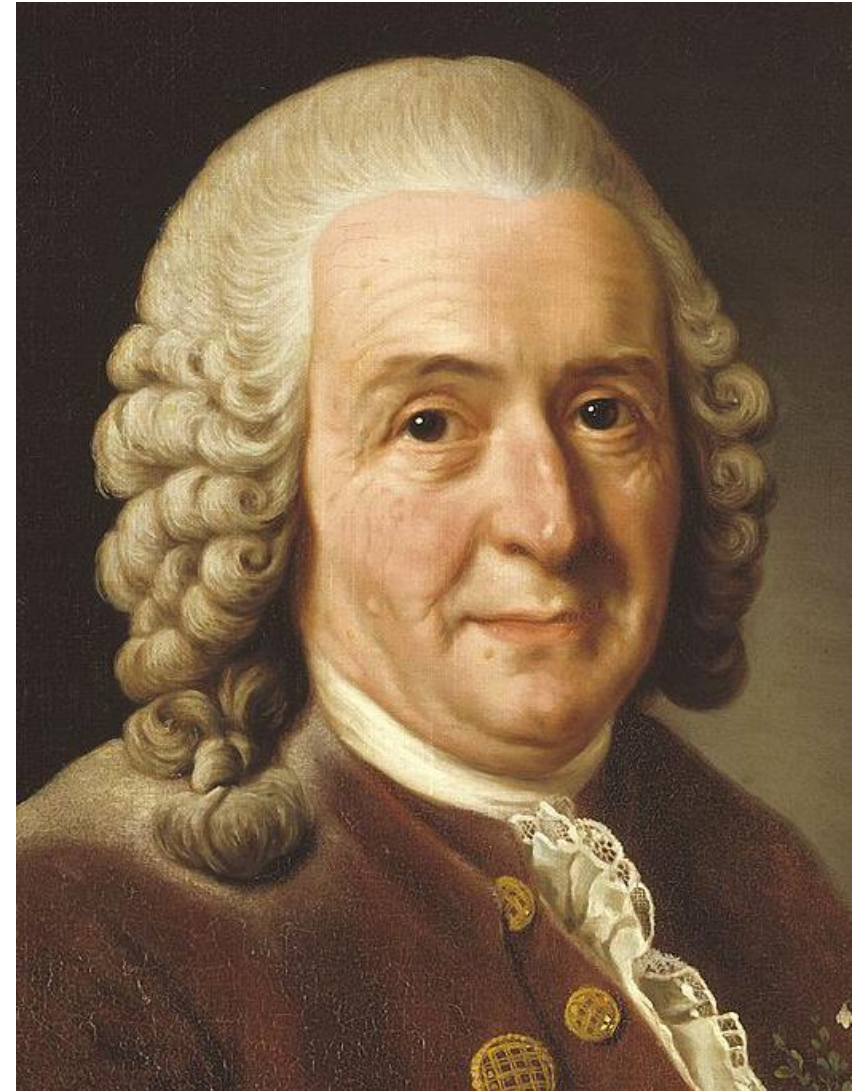
- Horticultural requirements
- Toxicity
- Common disease and insect problems
- Plant habitat
- Propagation methods
- Use for food and medicine

History of Taxonomy

- Identifying, classifying and assigning scientific names to plants
- Historical botanists trace the start of taxonomy to one of Aristotle's students, Theophrastus (372-287 B.C.), but he didn't create a scientific system
- He relied on the common groupings of folklore combined with growth: tree, shrub, undershrub or herb
- Detected the process of germination and realized the importance of climate and soil to plants
- Then, along came Linnaeus....

Carl Linnaeus: The Father of Botany

- Swedish botanist
- Developed binomial nomenclature
- Cataloged plants based on natural relationships—primarily flower structures (male and female sexual organs)
- Published *Species Naturae* in 1735 and *Species Plantarum* in 1753



Plant Classifications

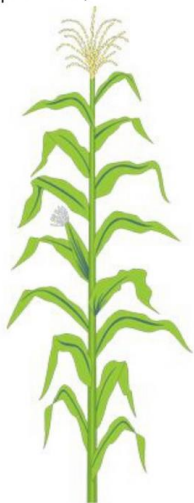
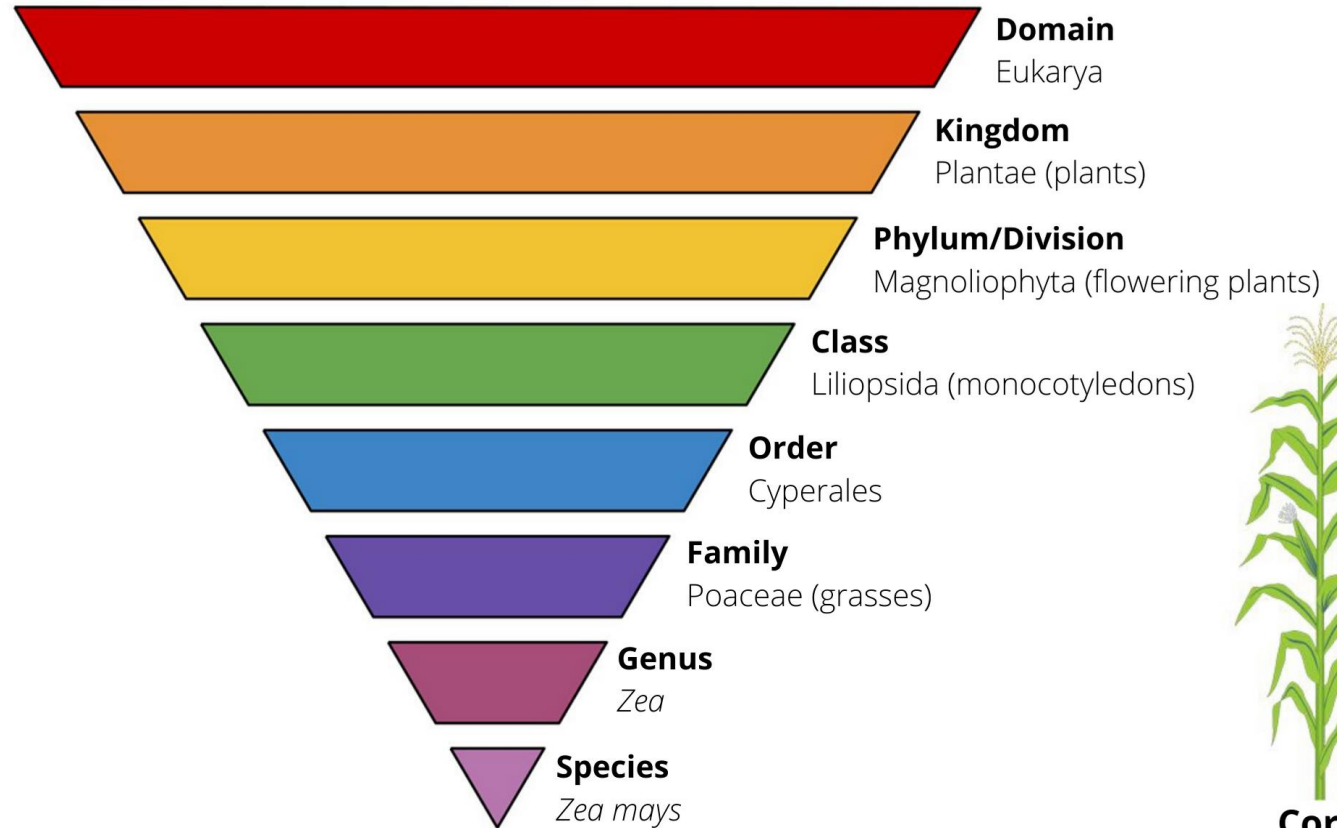
How do plants relate to each other?

Like we do!

Basically, just focus on:

- Family
- Genus
- Species

Taxonomic Classification: Corn

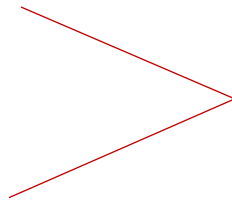


Corn

Zea mays

Family

- Group of closely related genera
- Similar structure and appearance
 - Seed pod/fruit
 - Flower parts
 - Leaf arrangement
- Cultural practices (i.e., the care of the plant) generally follows family lines
 - Perennial
 - Biennial
 - Annual



Plants are classified based on these characters

Family names end in “aceae”

- Per the members of the 1900’s International Code of Botanical Nomenclature, scientific names of plant families all have the Latin suffix "aceae": Asteraceae, Fabaceae, Rosaceae, etc.
- "Aceae" is Latin for "a family" or "a group"

Examples:

Rosaceae means "Rose Family"- roses, strawberries, peaches

Fabaceae means the “Pea family”- Also called legumes, beans, bluebonnets, mesquite

Back to our friend Carl Linnaeus!

- Linnaeus simplified scientific names by designating one Latin name to indicate the genus, and one as a "shorthand" name for the specific epithet. Also known as: **Binomial nomenclature!**
- Latin was the language of science in Western Europe.
- He followed this trend using Latin and Greek names.
- Spelling is universal but *Pronunciation* depends on local language and dialect

Scientific Names: Binomial Nomenclature

The names are composed of two parts:

1. Genus
2. Specific epithet

Family: *Asteraceae*
(sunflower family)



Species: *Blanket or Firewheel*

The specific epithet can give us hints about the plant:

- Specific epithet: the second word in a scientific plant name, not capitalized and usually an adjective used to describe size, color, leaf shape, growth habit, origin of the plant or to commemorate a person.
- Example: *Lupinus texensis*
- Texas Bluebonnet, Bluebonnet,
- Fabaceae (Pea Family)



Scientific Names: Binomial Nomenclature

Correct spelling

- Genus and specific epithet names are always underlined or in *italics*
- Genus is capitalized
- Specific epithet is not capitalized

Example: *Carya illinoensis*
(Juglandaceae)



Pop Quiz

Which is spelled correctly?

Live Oak (Fagaceae)

- a) *Quercus Virginiana*
- b) *Quercus virginiana*
- c) *quercus virginiana*
- d) *Quercus* *Virginiana*





If you said B....

That's correct!

a) *Quercus Virginiana*

b) *Quercus virginiana*

c) *quercus virginiana*

d) *Quercus Virginiana*

So how do you ID?: An Integrated Approach

Plant Type

Visual inspection
of plant
characteristics

Location

Photographic
references

Plant
classification
keys

Expert advice

So how do you ID?: Characteristics

Leaf Arrangement describes how the leaves (or branches) are arranged along a main stem (or branch).



Alternate



Opposite

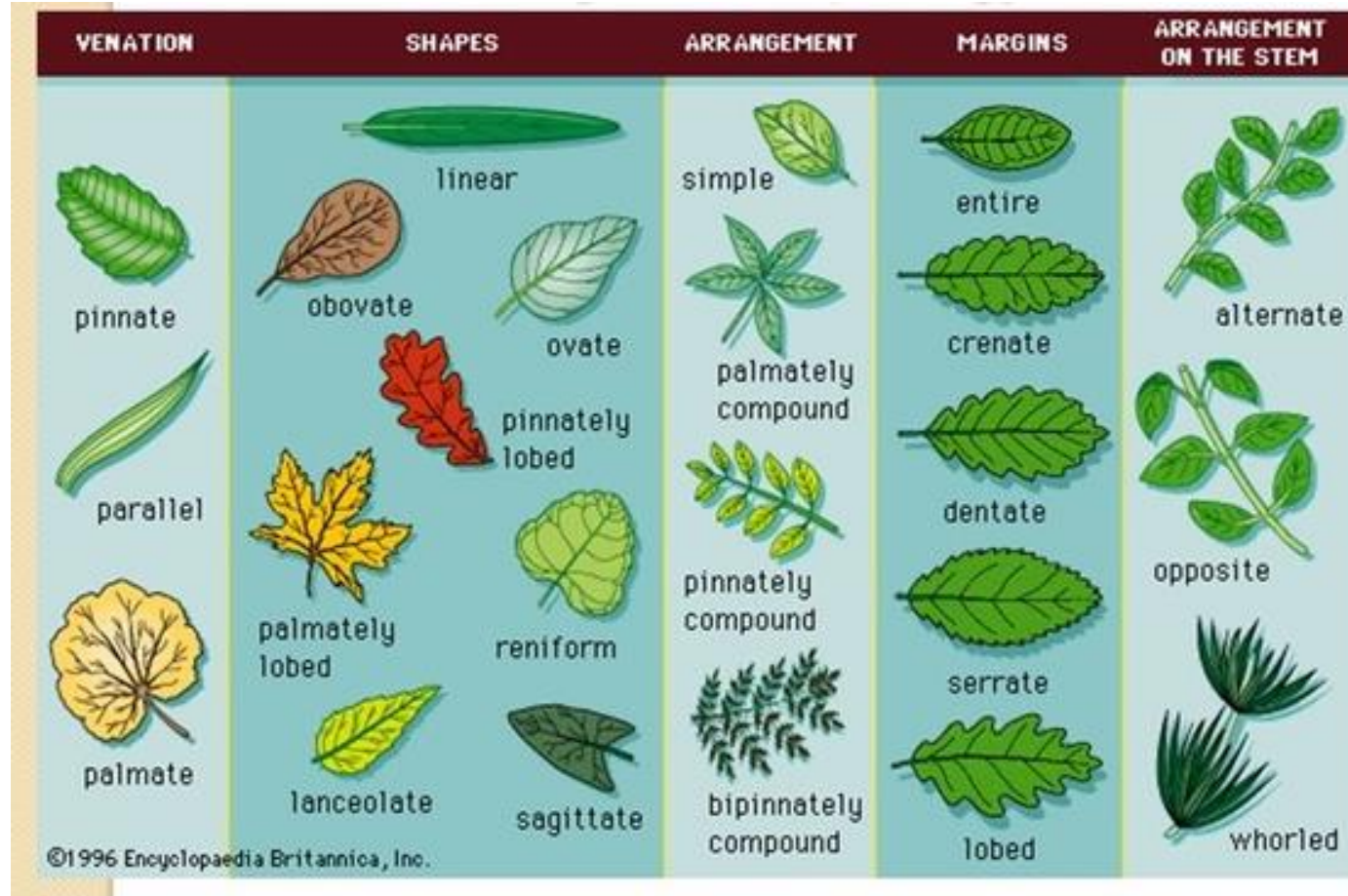


Whorled



Basal

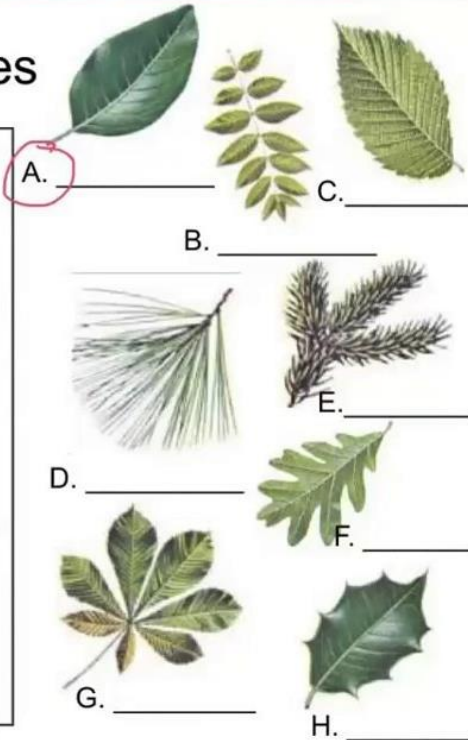
So how do you ID?: Shape, Margins, and Veining



Plant Classification Keys

Dichotomous Key For Leaves

- | | |
|---|-----------|
| 1. a. Needle leaves | go to 2 |
| b. Non-needle leaves | go to 3 |
| 2. a. Needles are clustered | Pine |
| b. Needles are in singlets | Spruce |
| 3. a. Simple leaves (single leaf) | go to 4 |
| b. Compound leaves (made of "leaflets") | go to 7 |
| 4. a. Smooth edged | go to 5 |
| b. Jagged edge | go to 6 |
| 5. a. Leaf edge is smooth | Magnolia |
| b. Leaf edge is lobed | White Oak |
| 6. a. Leaf edge is small and tooth-like | Elm |
| b. Leaf edge is large and thorny | Holly |
| 7. a. Leaflets attached at one single point | Chestnut |
| b. Leaflets attached at multiple points | Walnut |



A key is a device, which when properly constructed and used, enables a user to identify an organism. We'll discuss two!

- Dichotomous Keys
- Punch Card Keys



Photographic References



Plant ID? There's an app for that!

- iNaturalist
- PictureThis
- PlantNet
- PlantSnap
- LeafSnap
- Plantifier
- SmartPlant
- Garden Compass

iNaturalist.

Who you are

You'll need to make an **iNaturalist account** and please only post your own personal observations



Where you saw it

Record both the coordinates of the encounter as well as their accuracy. You can obscure the location from the public



What you saw

Choose a group of organisms like **butterflies** or better yet a specific organism like the **Monarch butterfly**. If you provide evidence you can leave this blank and the **community can help**



When you saw it

Record the date of your encounter, not the date you post it to iNaturalist



Evidence of what you saw

By including evidence like a **photo or sound**, the community can help add, improve, or confirm the identification of the organism you encountered. Help the community by taking clear well framed photos, by including multiple photos from different angles



Expert Advise

City Arborists

Horticulturists

Botanic Gardens

Texas A&M Forestry Service

Texas A&M Agrilife

Ladybird Johnson Wildflower Center

Master Naturalists

Helpful Resources

USDA Plant Database

<https://plants.sc.egov.usda.gov/home/>

Dallas Agrilife

<https://dallas.tamu.edu/>

Ladybird Johnson Wildflower Center

<https://www.wildflower.org/>

Texas A&M Tree Identification

<http://texastreeid.tamu.edu/content/idByLeaf/>

Pop Quiz!

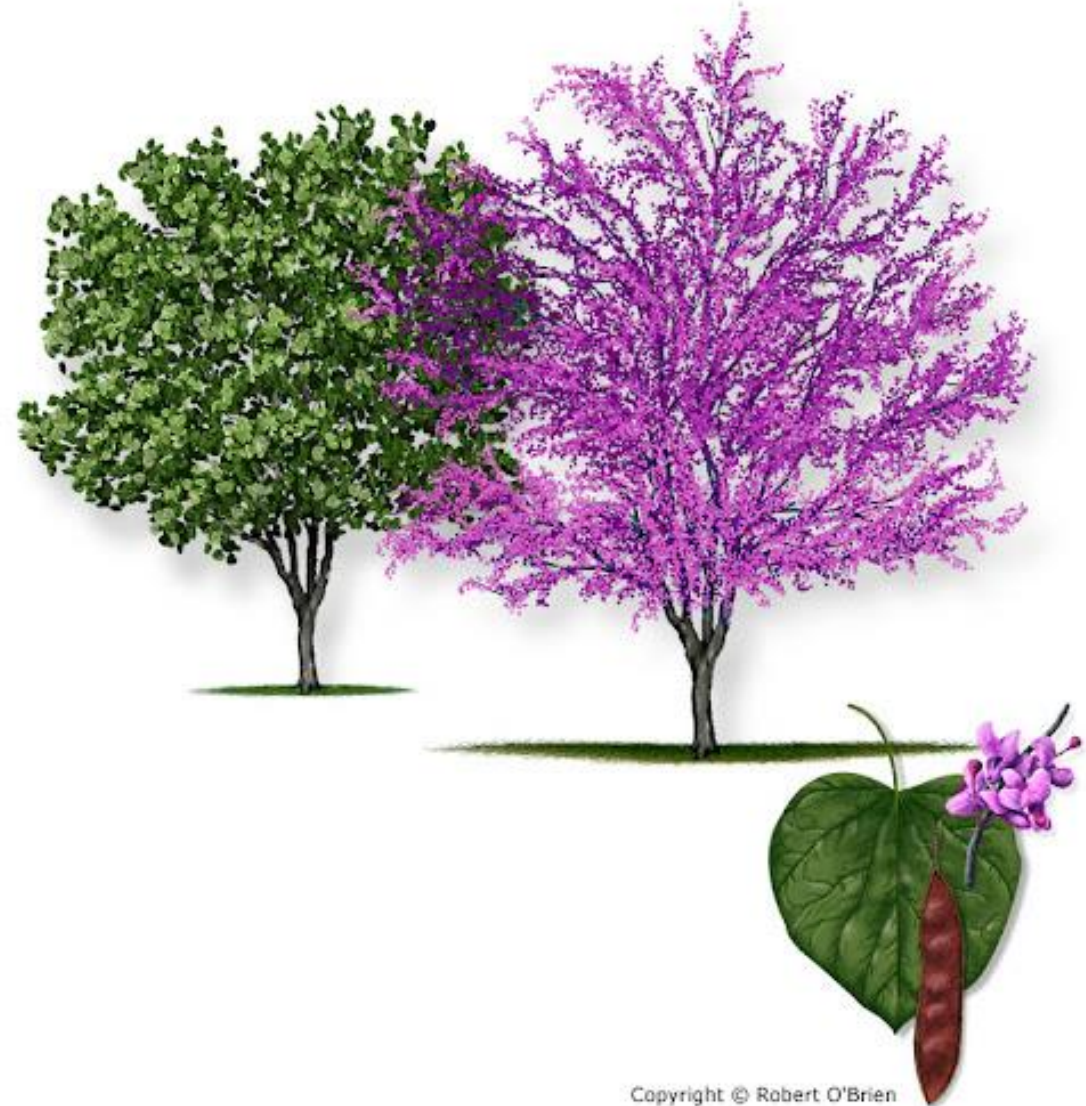
What plant am I?

- Plant Habitat: Texas Native
- Size: Small or medium tree
- Leaf shape: Cordate (heart shaped)
- Fabaceae (legume and bean family)
- Flowers: pink/ purple
- Flowering time: Early spring



Cercis canadensis var. texensis

- If you said REDBUD.....
Correct!
- [http://texastreeid.tamu.edu/
content/TreeDetails/?id=29](http://texastreeid.tamu.edu/content/TreeDetails/?id=29)



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What plant am I?

- Duration: Annual
- Habit: Herb
- Leaf Margin: Entire
- Size Notes: 6-16"
- Flower: Flowers in 3 inch spikes.
- Size Class: 0-1 ft.



Castilleja indivisa

Texas Indian Paintbrush, Entireleaf Indian
Paintbrush, Texas Paintbrush, Indian
Paintbrush, Scarlet Paintbrush

Scrophulariaceae (Figwort Family)

