



Master Gardener™ Program

Plant Identification

Ann Geyer

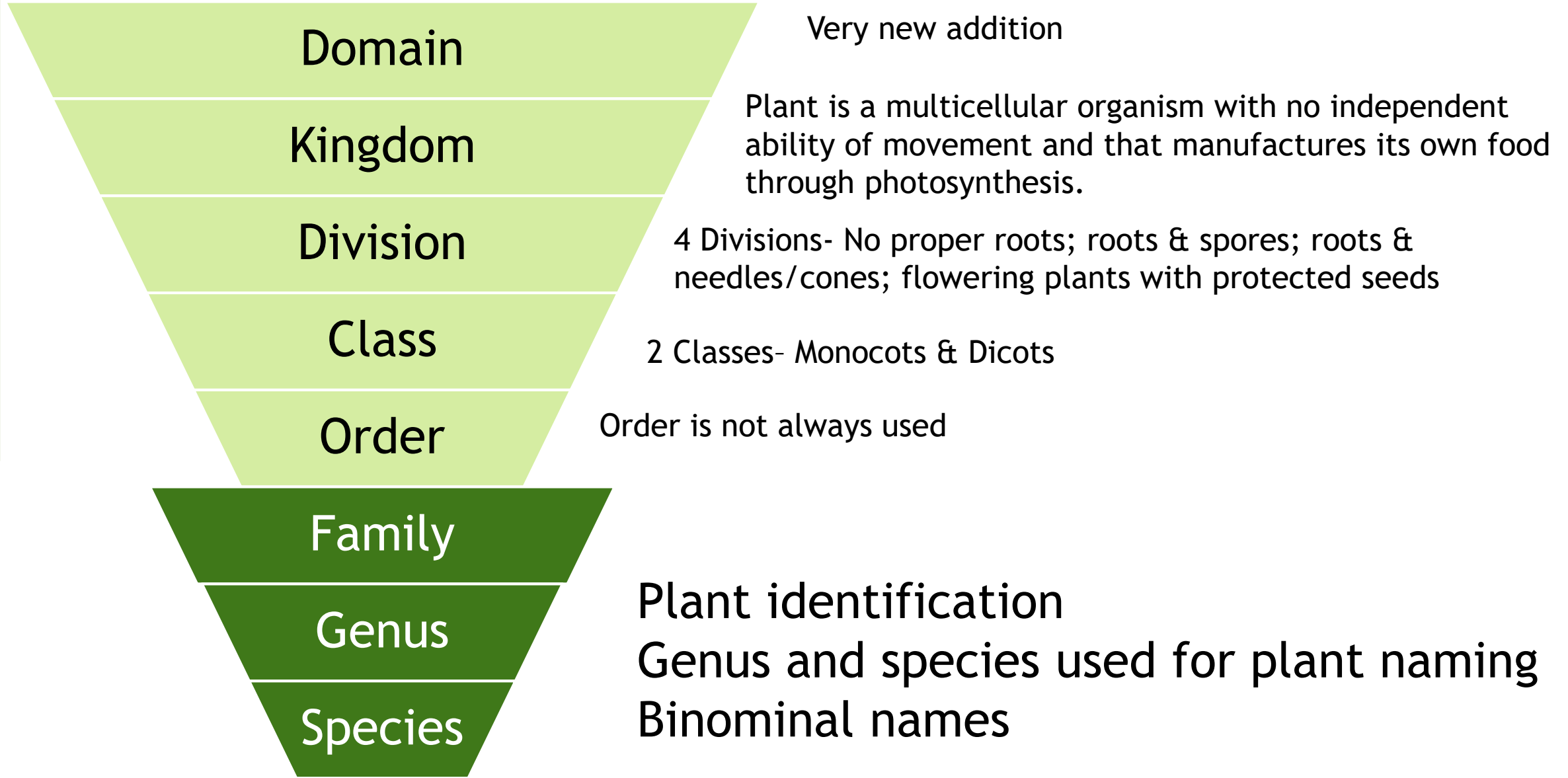
**2019 Lincoln County Master Gardener
Training Session
January 17, 2018**

Topics

- ▶ Plant taxonomy
- ▶ Botanical names
- ▶ Methods for classification and identification
- ▶ Some group practice

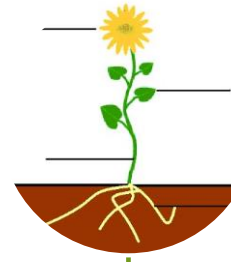
Plant Taxonomy—

the science that finds, identifies, describes, classifies, and names plants





NON-VASCULAR
-No roots, xylem, phloem
-Moss
-Algae



VASCULAR
--Roots, xylem, phloem



SEED BEARING



SPORE BEARING
-Ferns

Divisions



FLOWERING
Angiosperms
300,000 species



NON-FLOWERING
Gymnosperms—Conifers and
a few others



MONOCOT
-Grasses
-Lilies
-Orchids
-Cereal grains



DICOT

Class

The Linnaeus System

- ▶ Swedish botanist Carolus Linnaeus
- ▶ Classification system started in 1735
- ▶ Named between 6,000 and 10,000 plants
- ▶ Used Latin because it was the common scientific language of the time
- ▶ Bi-nominal (2 names) *Genus species*
- ▶ Over 1 million plants now documented and named





Archibald Menzies was a physician botanist, and naturalist who explored the Pacific islands. Introduced over 100 species to British gardens.

Pseudotsuga menziesii



David Douglas was one of the most well-known collectors of Pacific Northwest flora. His name is attached to over 80 species “douglasii or douglasiana.”

Spirea douglasii

Binomial Names

- ▶ *Genus species*
 - Written in italics
 - Genus capitalized
 - Species not capitalized
- ▶ Name may indicate location, habitat, distinguishing characteristics, initial discoverer
 - **Location:** *canadensis*, *chinensis*, *japonica*, *virginiana*
 - **Flower or foliage color:** *alba* = white, *aurea* = golden, *lutea* = yellow, *rubra* = red
 - **Usage:** *Hepatica* -- used to treat hepatitis of the liver
 - **Shape:** *arborea* = treelike, *compacta* = dense, *nana* = dwarf, *scandens* = climbing
 - **Discoverer:** L-Linnaeus
 - **Honoree:** *Franklinia alatamaha* in honor of Benjamin Franklin

Species can be further divided

► Subspecies

- Distinct variant, usually based on geographical location
- Written as *Genus species* subsp
- Eg. *Camassia leichtlinii* subsp **suksdorfii**

► Variety

- Slightly different botanical structure that still occurs naturally; breed true to type
- Written as *Genus species* var.
- Eg. *Cardamine nutallii* var. **gemmata**

► Cultivar

- New plant that comes about in cultivation
- Written as *Genus species* 'Cultivar'
- eg. *Rosa* 'Mr. Lincoln' or *Cornus sericea* 'Flaviramea'

► Hybrid

- New plant that is the result of a cross between two botanically distinct species; most created at the species level; often sterile & can only be propagated through cuttings or divisions.
- Eg. *Fragaria* × *ananassa* (cross with 2 different species)
- Eg. × *Fatshedera lizei* (cross with 2 different genus—less common)

Labeling Example

Family name

Genus species

'Cultivar name'

Common name

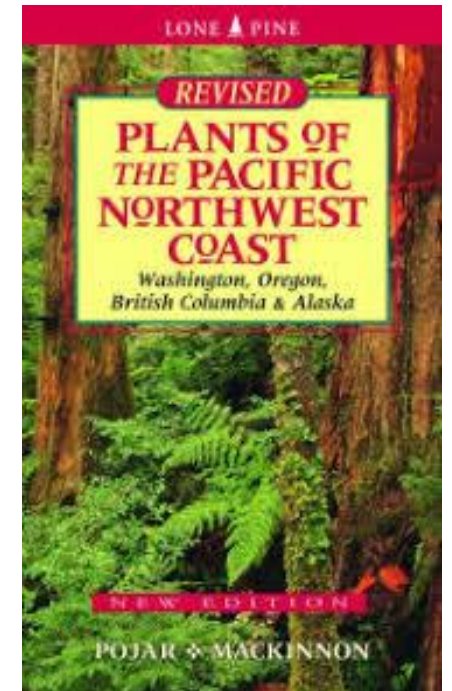
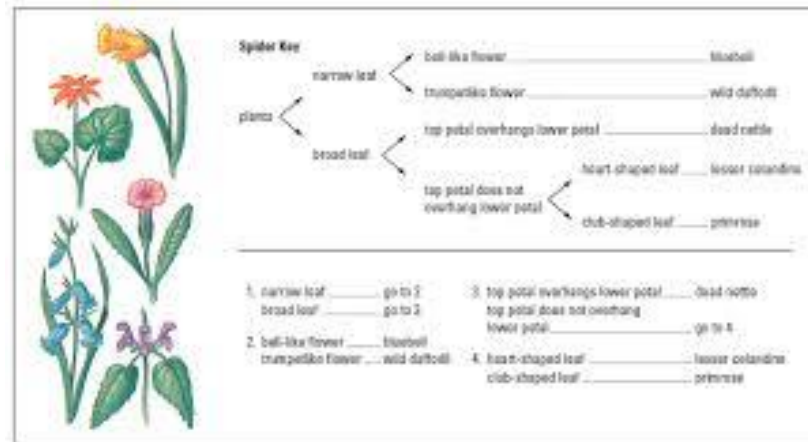


TradeMark Names (an aside)

- ▶ Designated as ® or TM
- ▶ Not part of a botanical name
- ▶ Used by commercial industry
 - Replace 'bad' cultivar names
 - Create brand labeling
- ▶ Cultivar names must remain free for everyone to use
- ▶ Cultivars can be marketed under different trademark names:
 - *Rosa* 'Korlanum' is marketed under the three different TM names Surrey, Sommerwind, and Vente D'ete.

Methods for Plant Identification

- ▶ Expert determination
- ▶ Observational experience
- ▶ Comparison to a known example (field guide, herbarium)
- ▶ Dichotomous keys

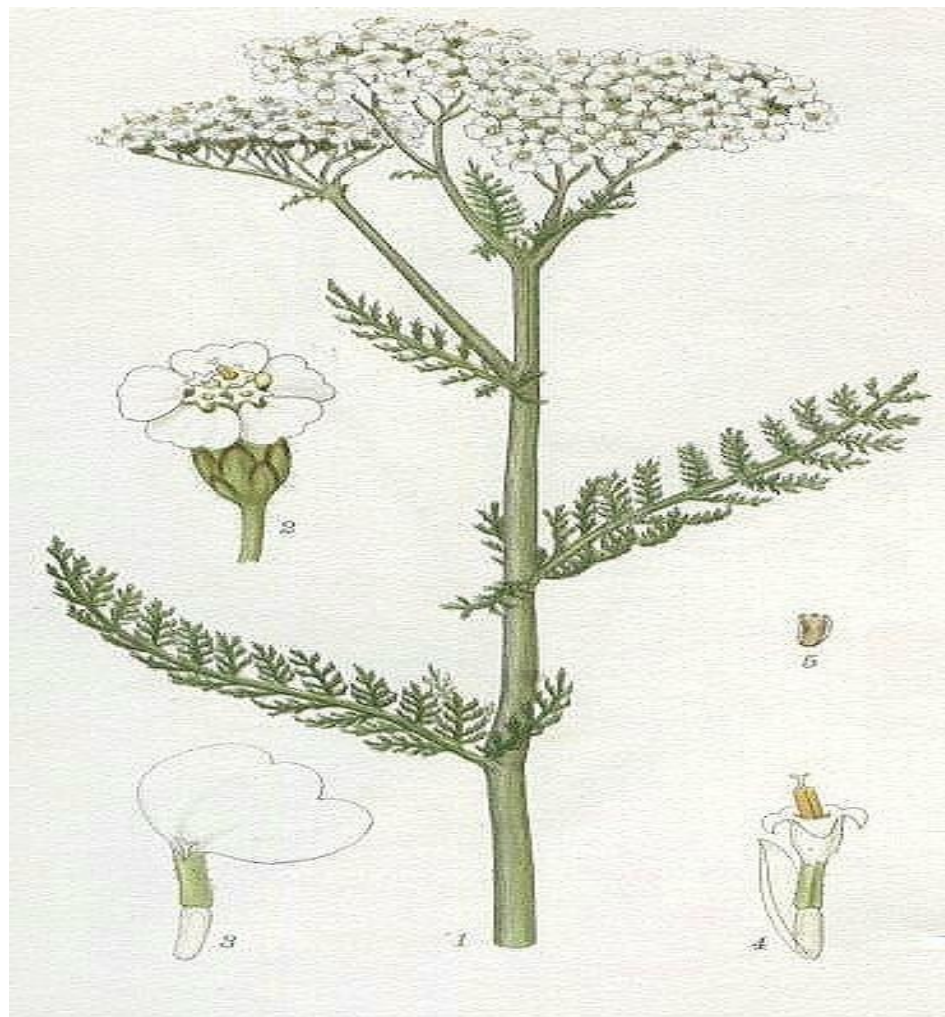


All parts can be used for identification

- ▶ Overall shape
- ▶ Leaves
- ▶ Flowers
- ▶ Fruit/seed
- ▶ Bark
- ▶ Buds
- ▶ Roots
- ▶ Color



Sample or Picture



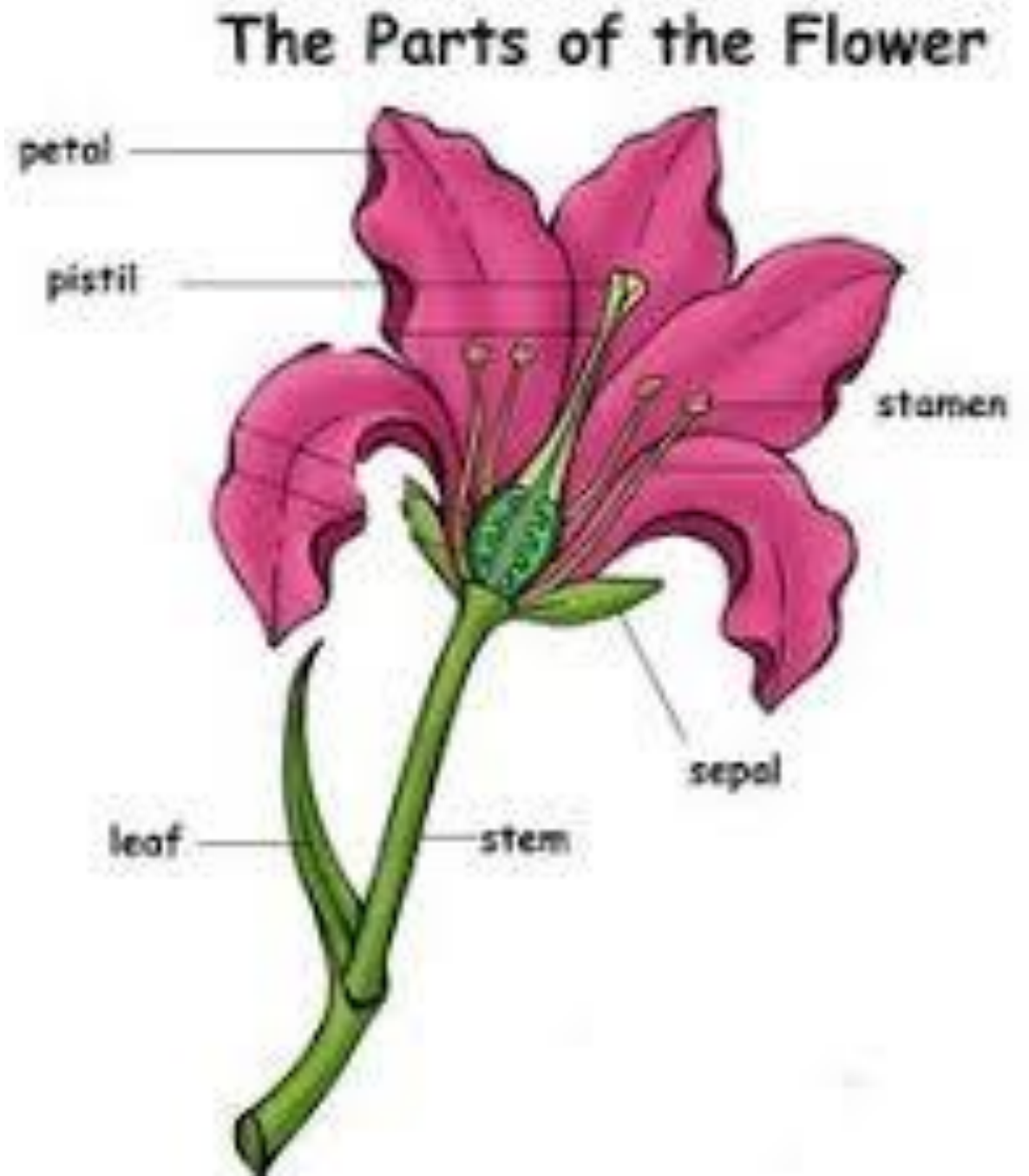
Careful Observations & Description

- ▶ What is the overall shape and color?
- ▶ What do you notice first?
- ▶ Branching structure
- ▶ Leave arrangement, shape, margin, venation, color, size
- ▶ Is there a flower?
- ▶ Number of sepals, petals, stamens, and pistils

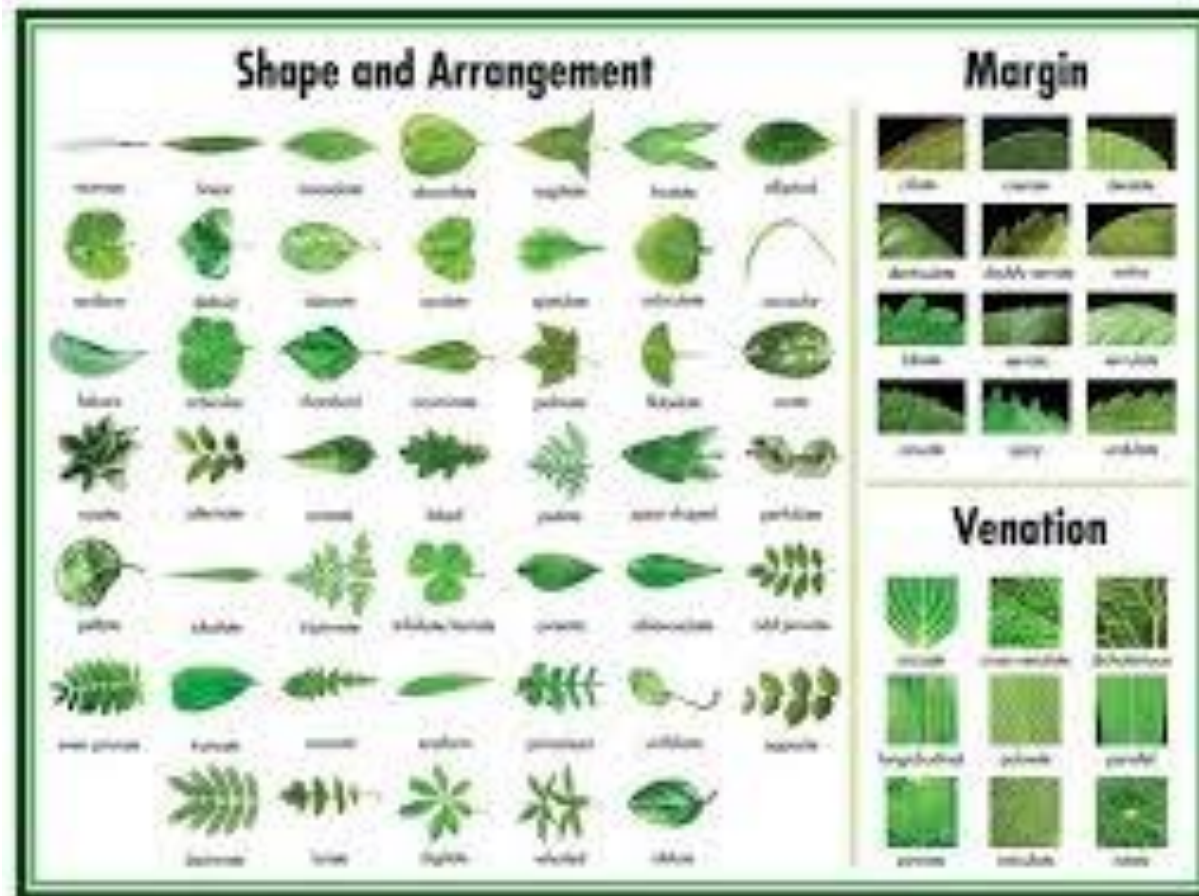
Handout

Critical terms-Flower

- ▶ Pistil -
- ▶ Stamen
- ▶ Petals
- ▶ Sepals
- ▶ Regular flower
- ▶ Irregular flower



Leaf Characteristics



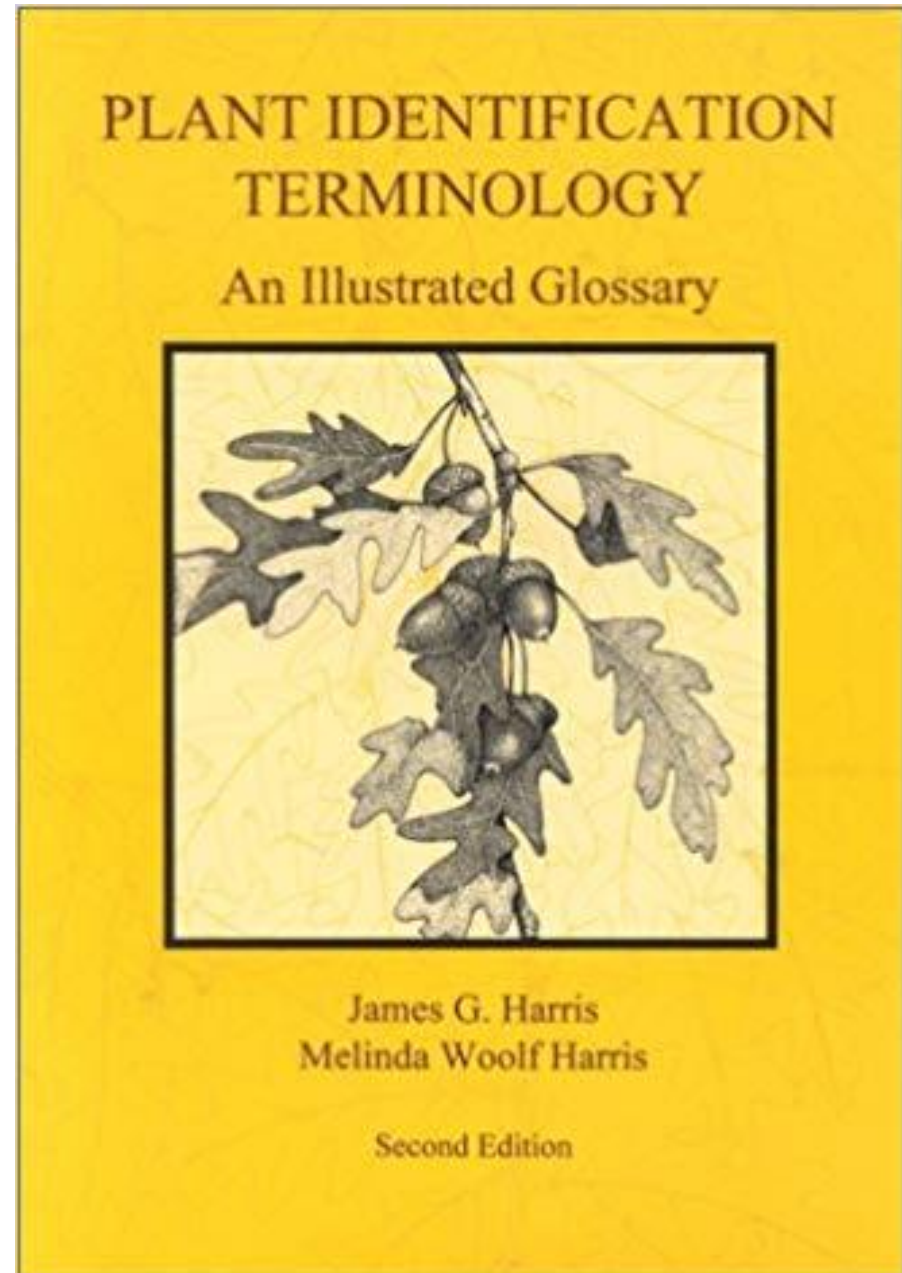
Critical Terms

► Leaf

- Shape
- Arrangement
- Margins
- Veins
- Color-young & mature
- Size

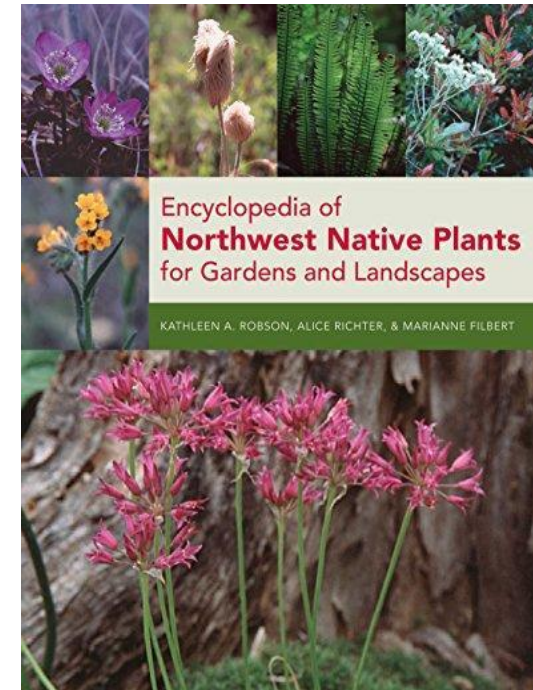
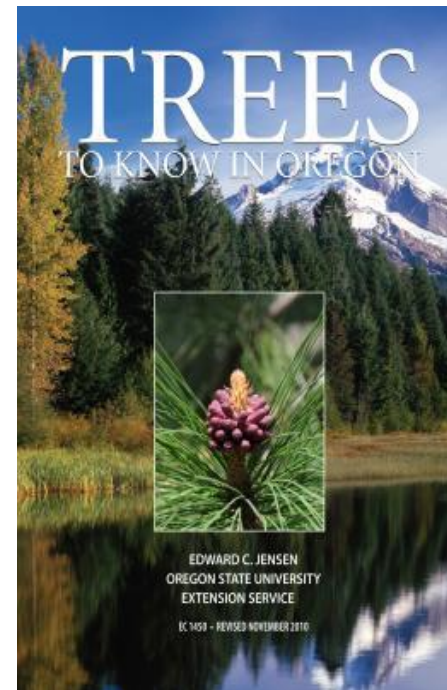
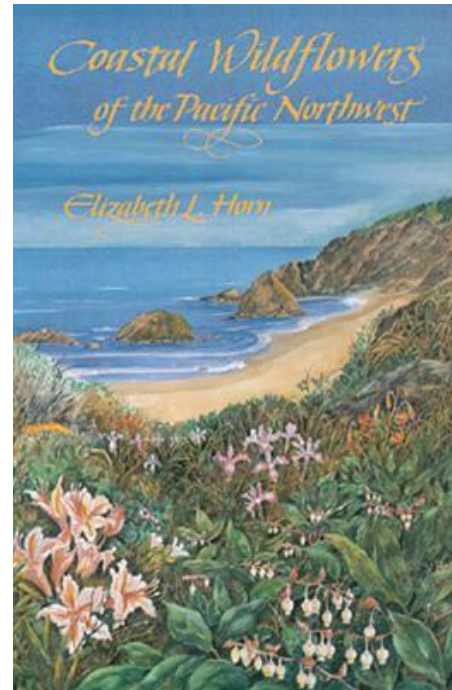
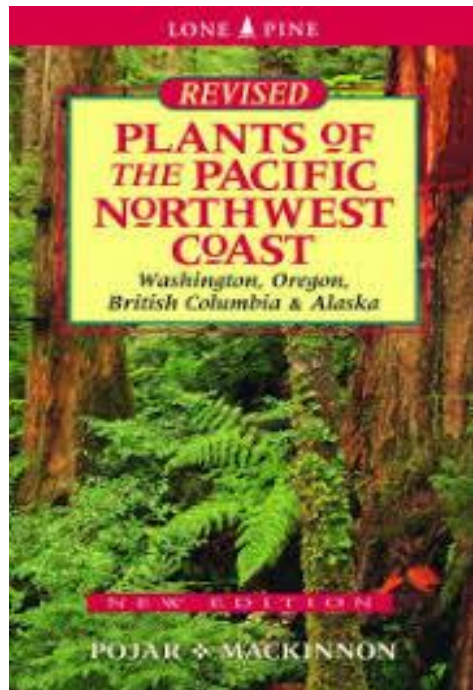
► Flower

- Sepals
- Petals
- Stamens
- Pistils
- Shape
- Color



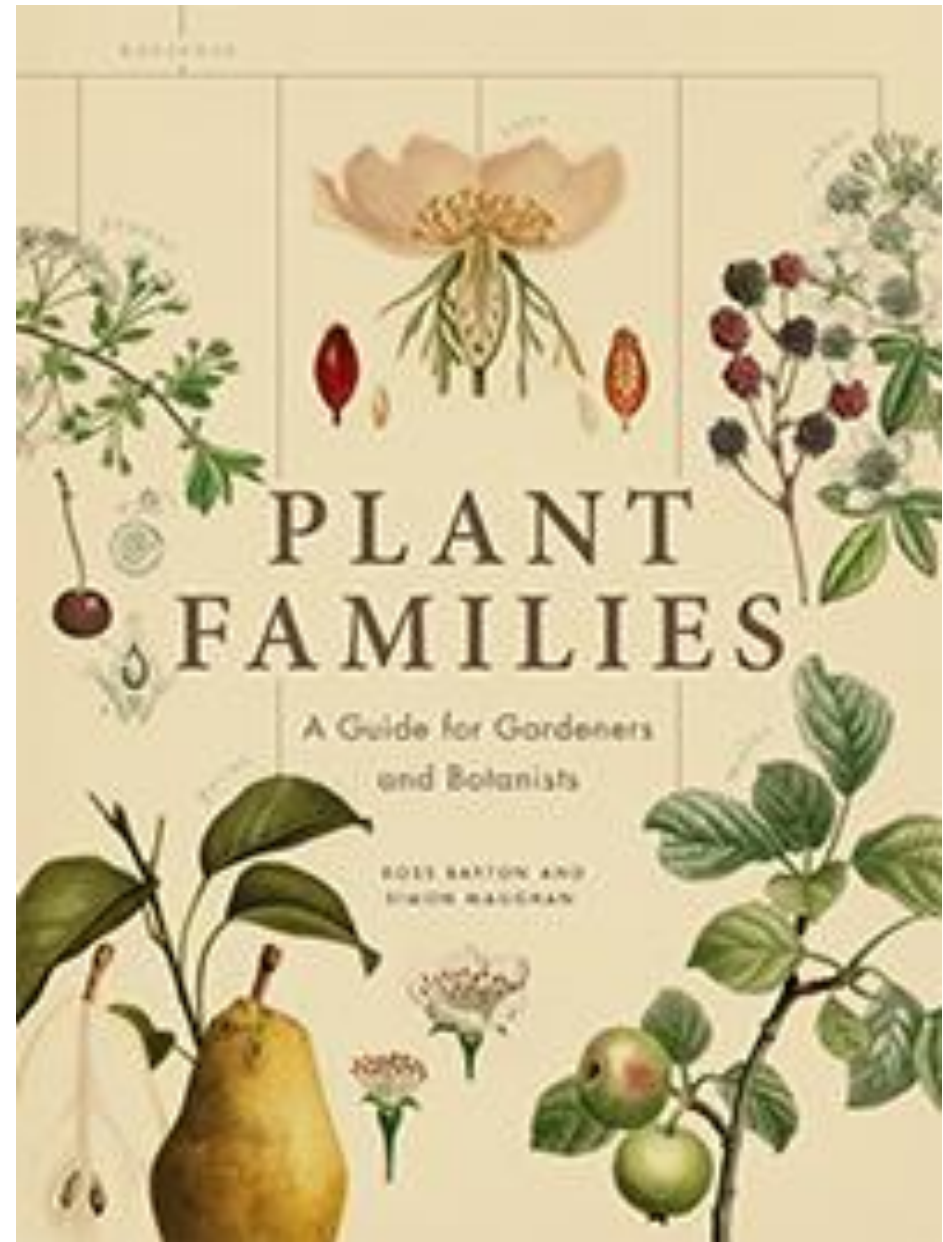
Turn to a Field Guide

- ▶ Search within family
- ▶ Pictures & descriptions for comparison



Plant Families

- ▶ Latin name always ends in 'aceae'
- ▶ Help to predict what a plant will look like
- ▶ Several hundred plant families
- ▶ [The plant list](#)



Hydrangeaceae,

the hydrangea family, are usually rather robust herbs or shrubs, with opposite leaves and a line running across the stem between opposing leaf stalks.

The family includes 17 genera and 190 species, most of them in warmer temperate zones, though a few species enter the tropics.

The flowers have free petals that are valvate in bud.

There are at least twice as many stamens as petals, and the ovary is half to fully inferior.



Some Common Plant Families



Umbels/Parsley



Aster/Daisy



Mint



Mustard



Lily



Rose



Pea



Grass



Cactus



Heath



Mallow



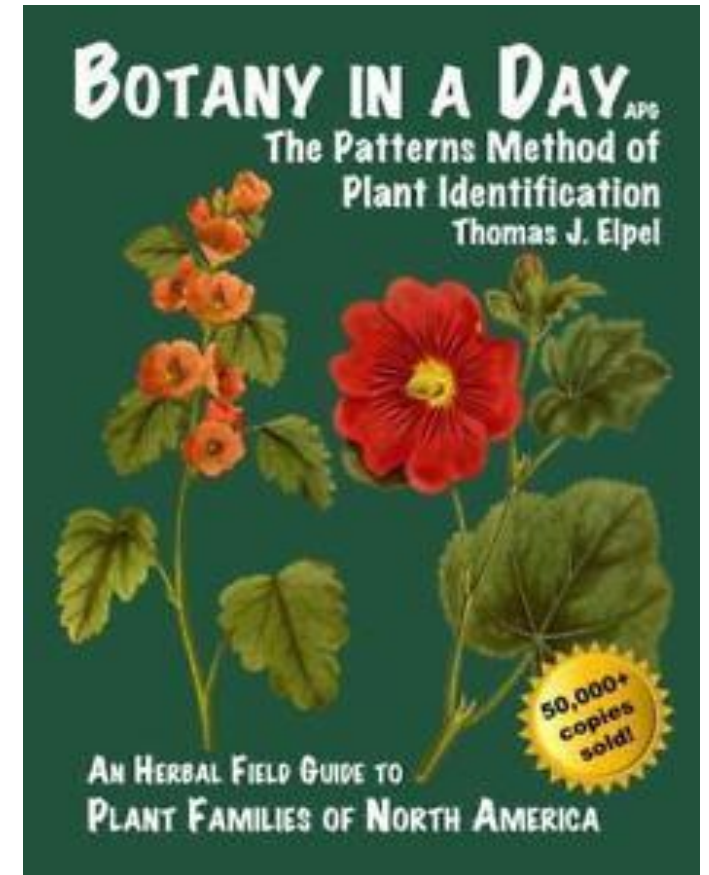
Buttercup



Geranium

Classification by Family

- ▶ Parsley
 - Compound umbels
- ▶ Aster
 - Unique composite flower heads
- ▶ Mint
 - Square stems, opposite leaves, spicy aroma
- ▶ Mustard
 - 4 petals with 6 stamens of which 4 are tall and 2 short
- ▶ Lily
 - Monocot, 3 petals and 3 sepals usually identical in size and color
- ▶ Rose
 - 5 petal and many stamens often with oval, serrated leaves
- ▶ Pea
 - Irregular, banner, wings, and keel petals (unique to peas)
- ▶ Grass
 - Monocot, hollow flower stems with knee like nodes or joints

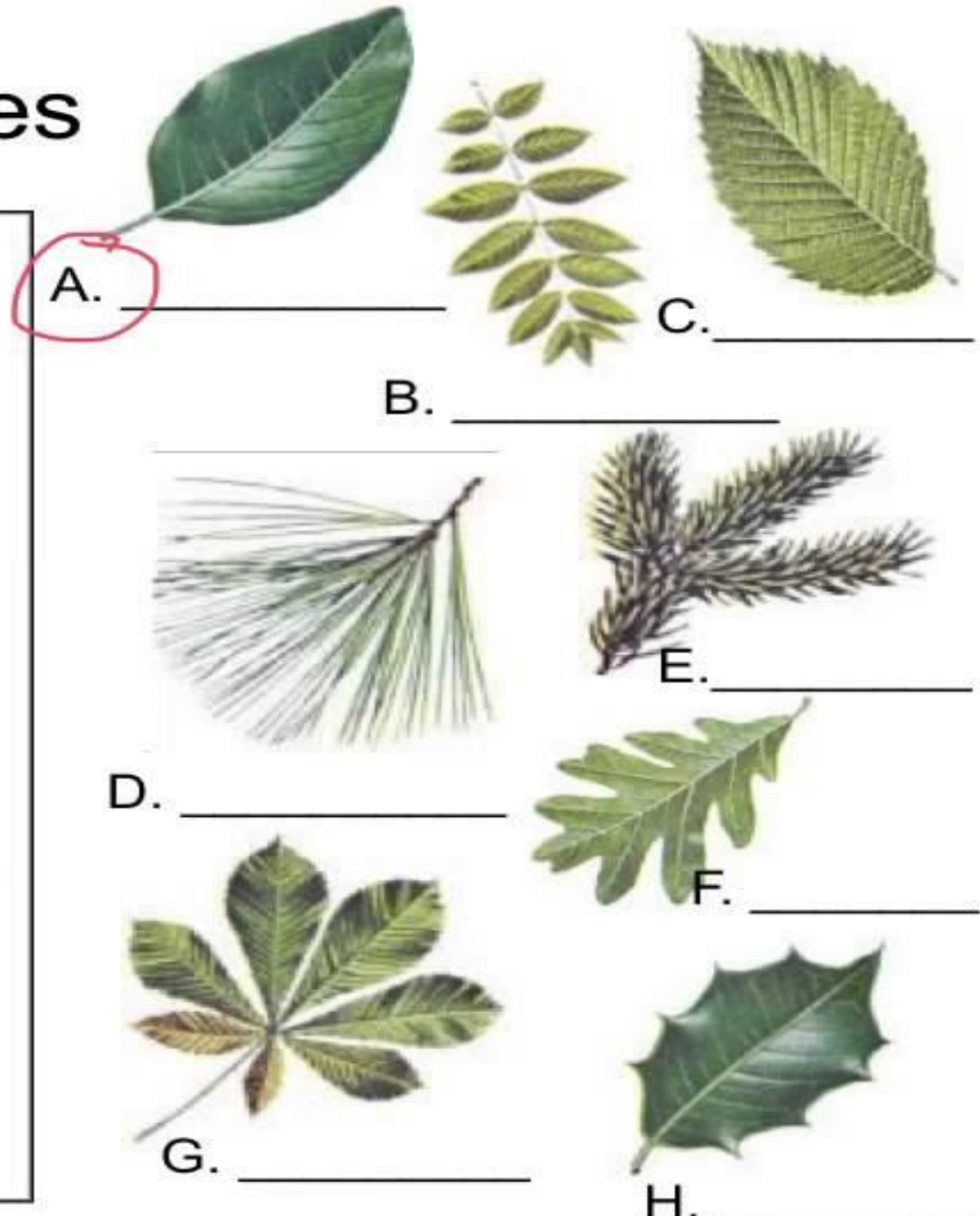


Dichotomous Keys

- ▶ A series questions with only 1 of 2 answers (usually)
- ▶ Each answer takes you down a different part of the taxonomy tree
- ▶ Keys exist for many different types of plants
 - Common PNW Trees
https://oregonstate.edu/trees/dichotomous_key/index.html
 - Woody Plants
http://oregonstate.edu/dept/ldplants/plant_ident/plant/search/type/1
 - LCMGA website
<https://www.orcoastmga.org/memberinfo>

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 |



Crataegus douglasii
Hawthorn

Type

Arrangement

Edge

Vein

Stems

Flowers

Fruit



Some Leaf Examples

Simple Leaf

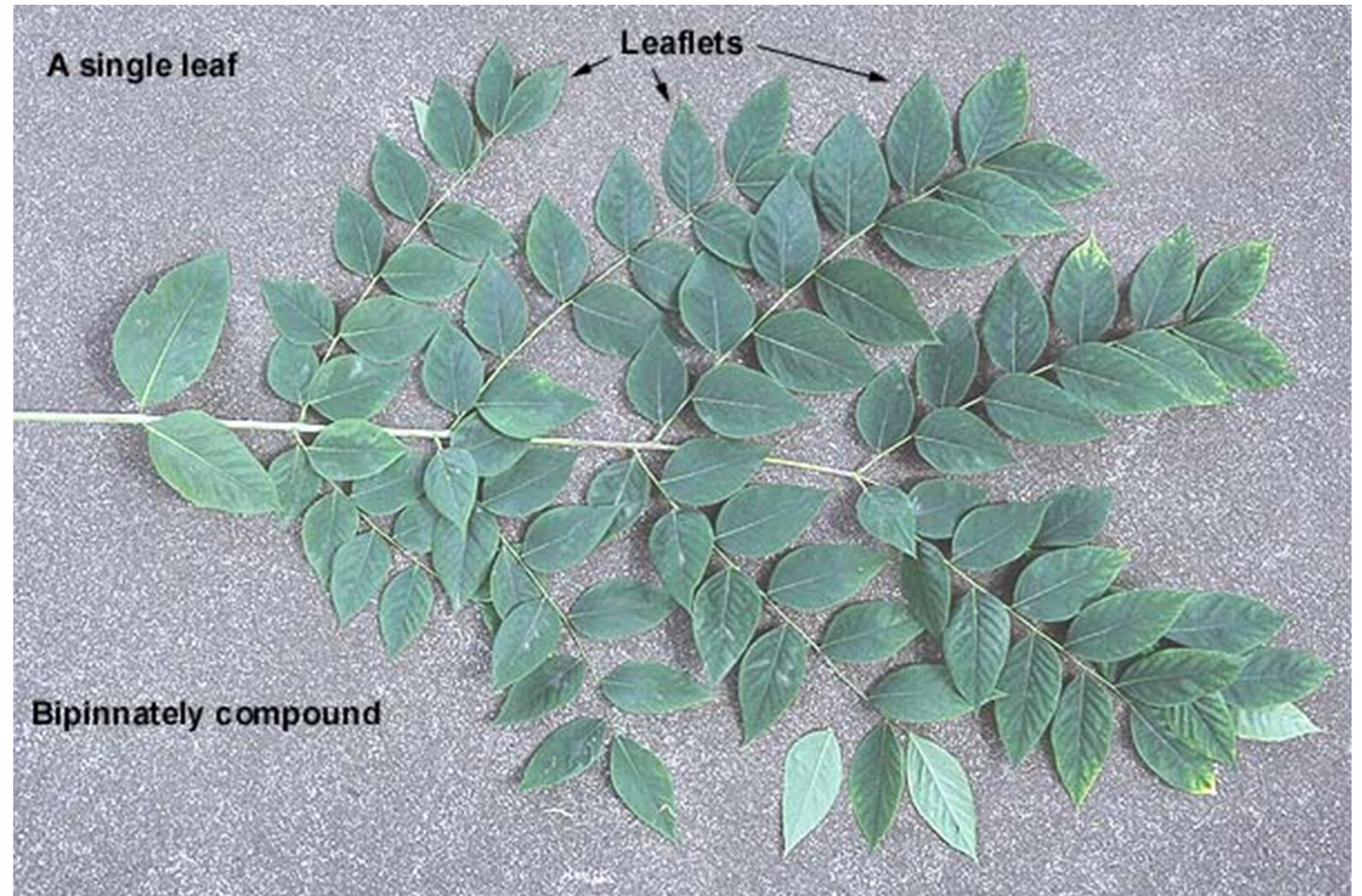


Pinnately Compound

Rows of leaflets along the stem with one at the tip.

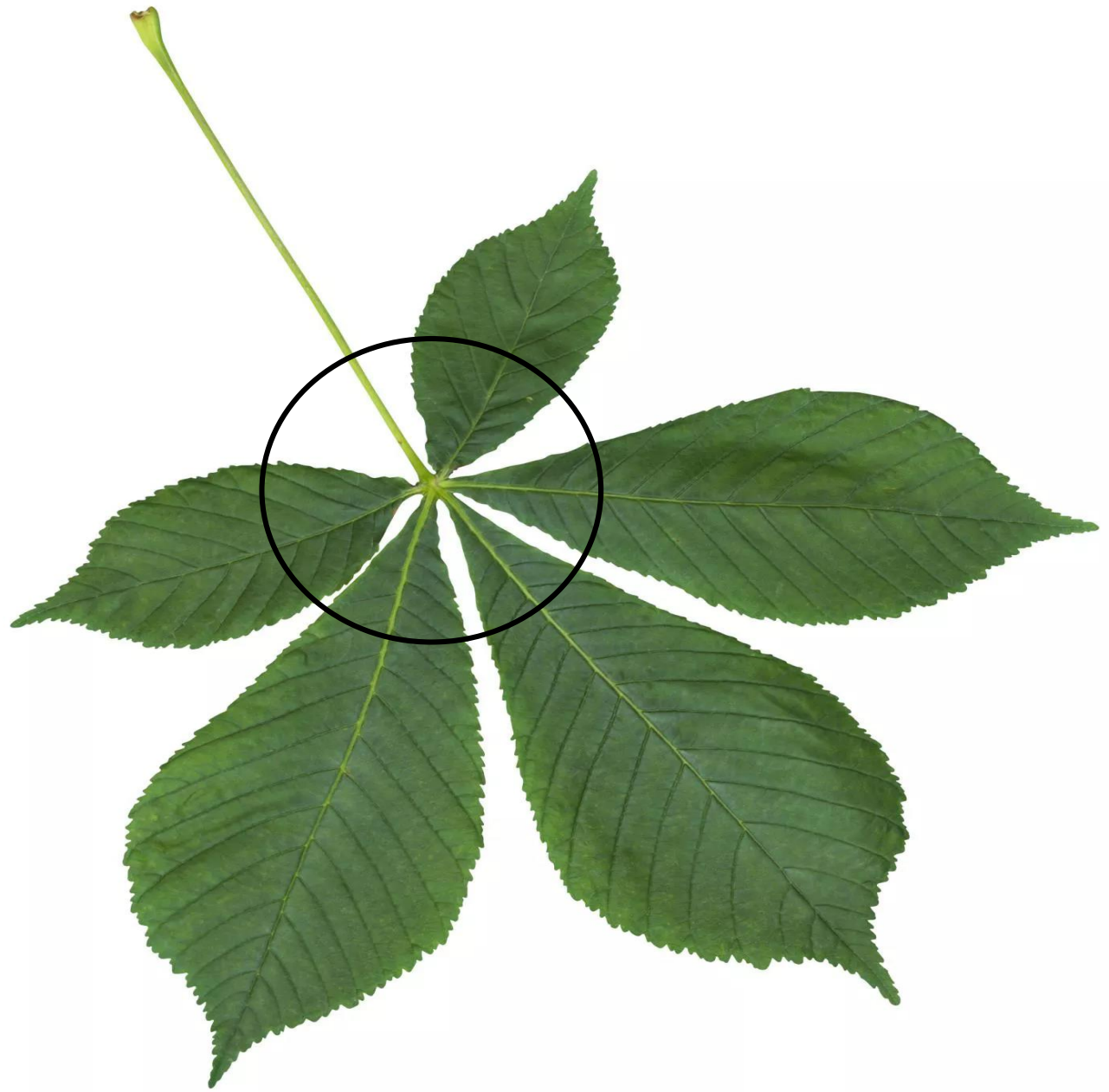


Bipinnately compound



Palmately Compound

Attached at one point on the petiole.



Alternate
Arrangement



Opposite Arrangement

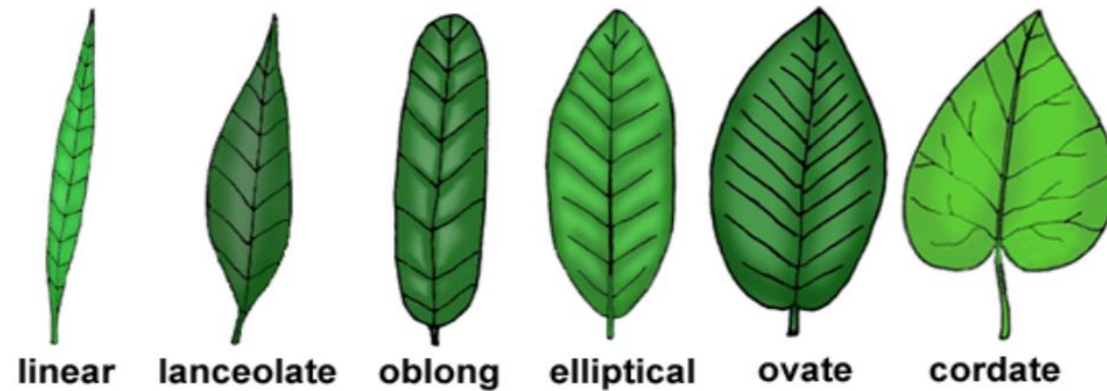
Ash

Maple

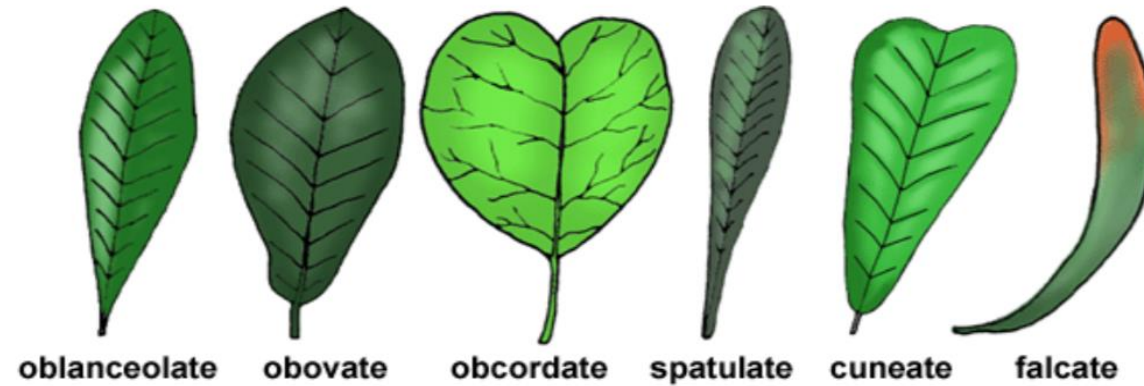
Olive



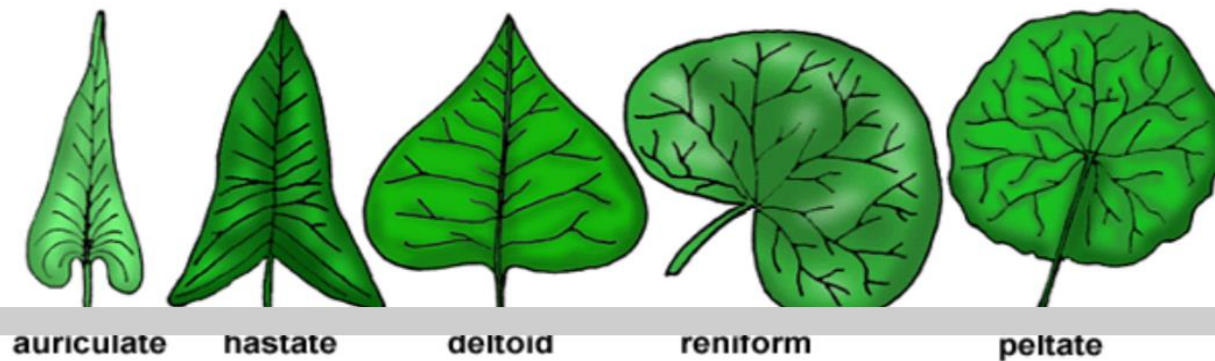
Leaf Shapes



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Cordate Leaf Shape

Asarum canadense

Wild Ginger



Obcordate Leaf Shape

Oxalis oregana



Truncate Leaf Shape

Tulip tree



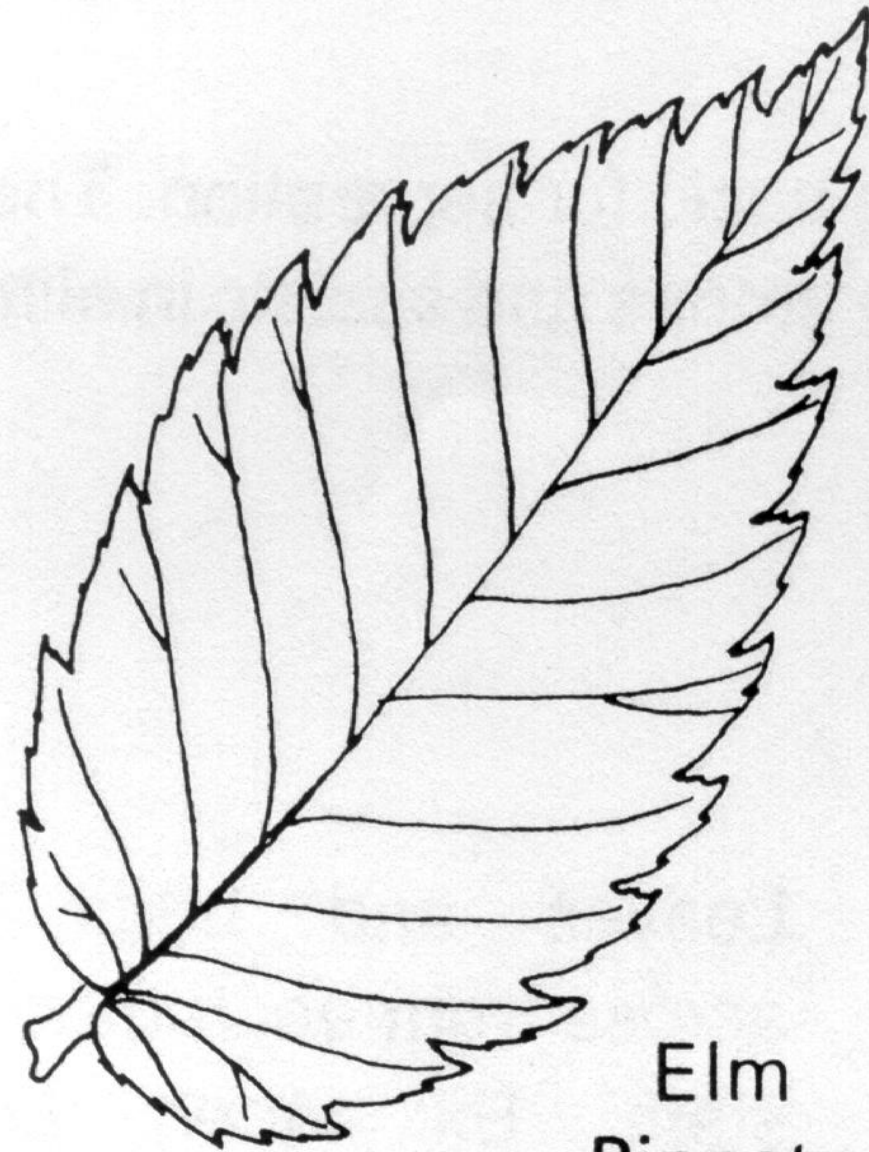
Parallel Veins

Prosartes hookeri

Hooker's Fairybell



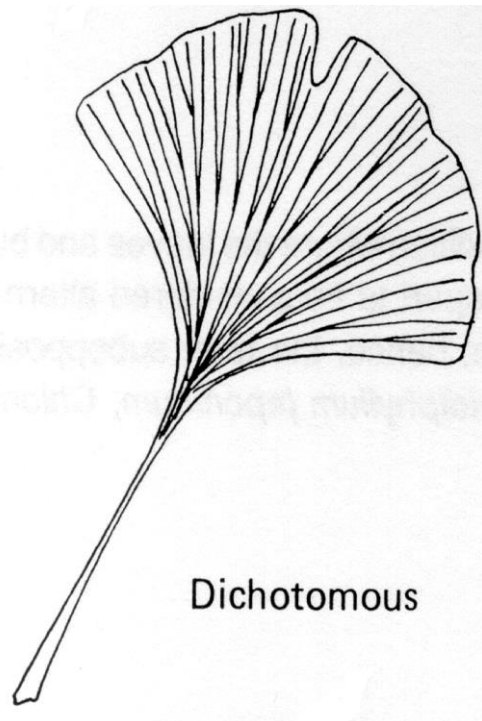
Pinnate Veining



Elm
Pinnate



Dichotomous Vein



Leaf Margins & Shapes

