The background of the slide features a photograph of a forest. Sunlight filters through the dense canopy of tall trees, creating bright highlights and deep shadows. The colors are rich greens and yellows.

WOODY PLANT BASICS

Led by Cat Chamberlain, Wayne Daly, Morgan Furze, Anju Manandhar

MAIN AIMS

- Temperate Trees
- General Plant Functioning
- Flowers to Fruits to Seeds

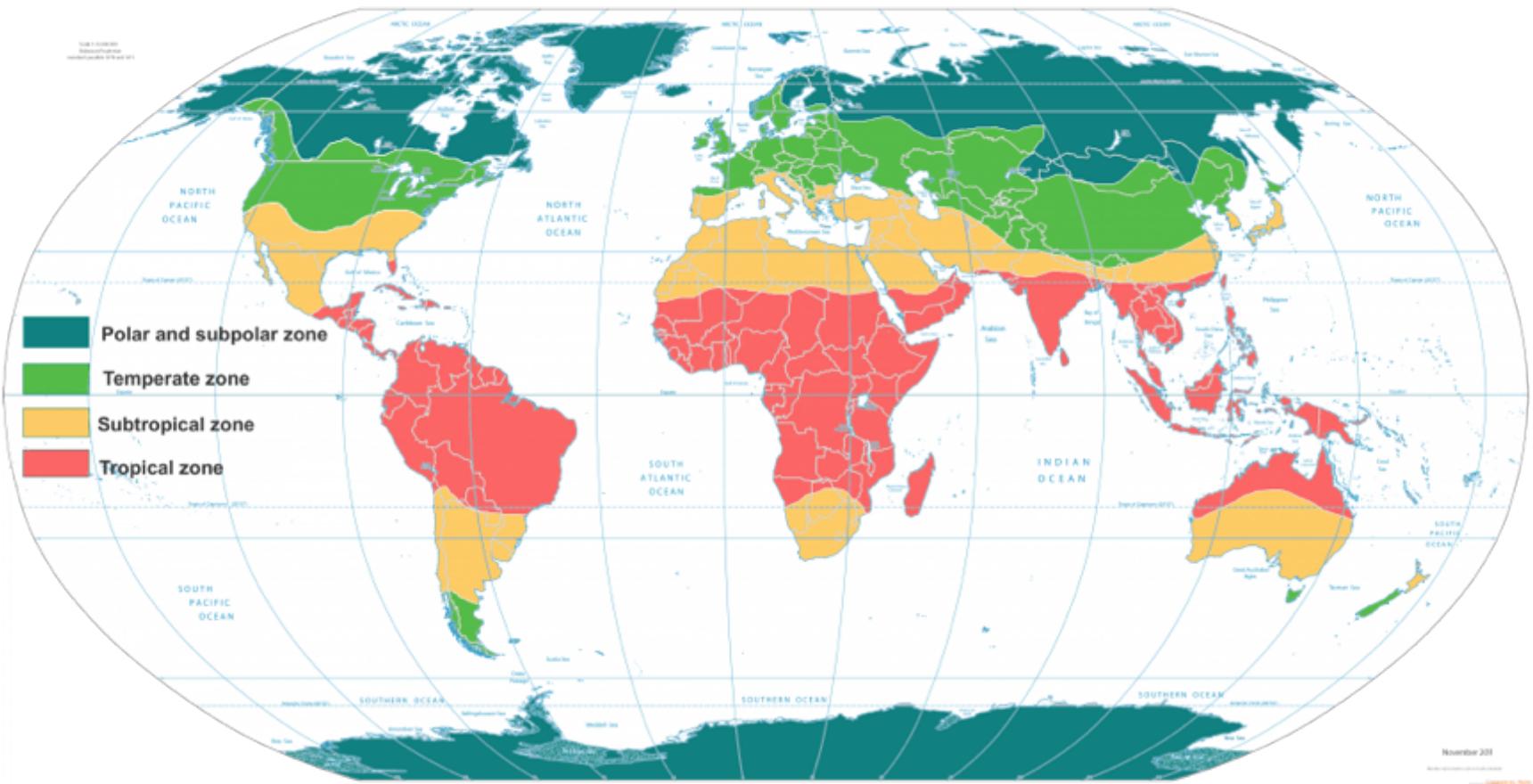


General Terms:

- TEMPERATE

Political Map of the World, November 2011

Fuente: <https://www.esri.com/library/publications/sa-maps-publications>
Adaptación por: Coloma



PHENOLOGY:
the timing of recurring life
history events

COLD HARDINESS:
Freezing resistance through the
phenophases



Charrier & Améglio, 2011; Vitasse et al., 2014

American Beech: *Fagus sylvatica*

DORMANT BUD



BUDBURST



LEAFOUT



PLANT FUNCTIONING:

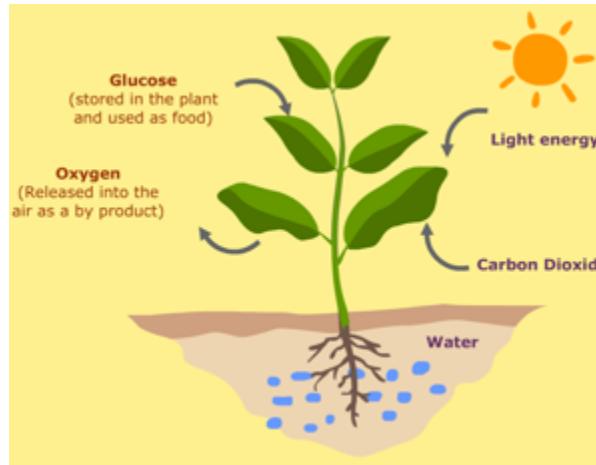
Physiology

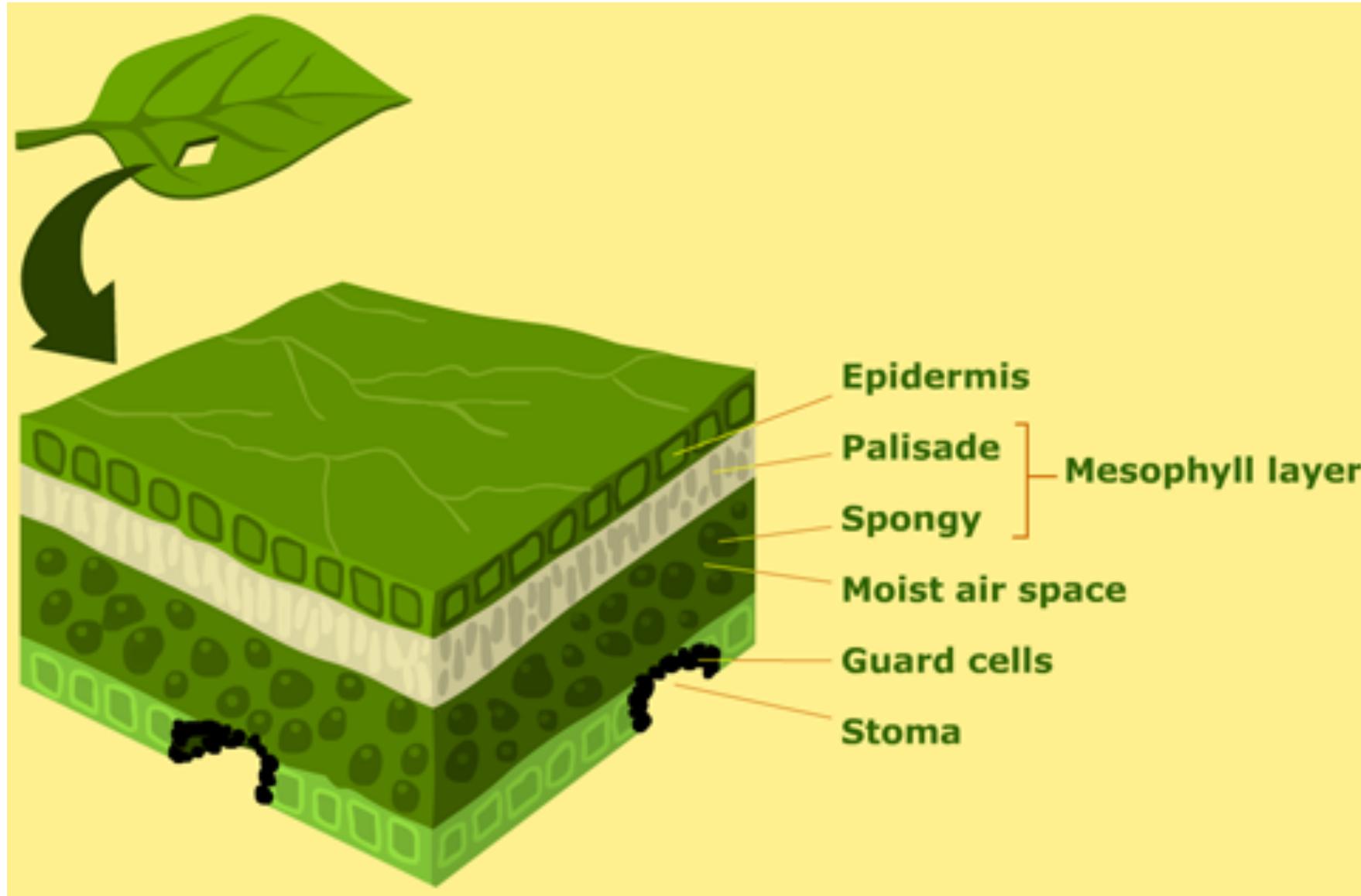
- PHOTOSYNTHESIS
- RESPIRATION
- XYLEM
- PHLOEM



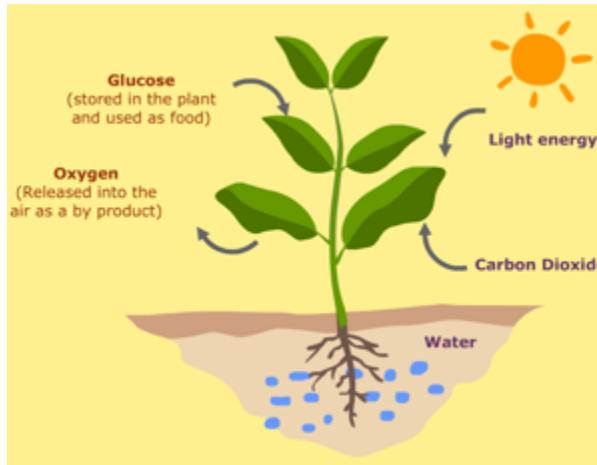
Photosynthesis

$\text{CO}_2 + \text{water} + \text{light energy} = \text{glucose} + \text{oxygen}$





Photosynthesis

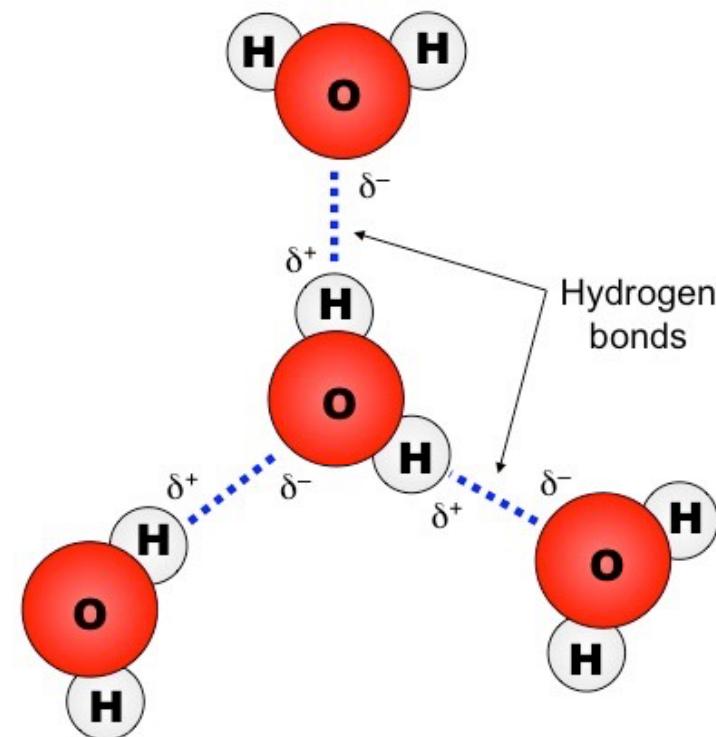


Respiration



XYLEM: vascular tissue in plants that conducts water upward from the roots to the leaves

COHESION-TENSION THEORY



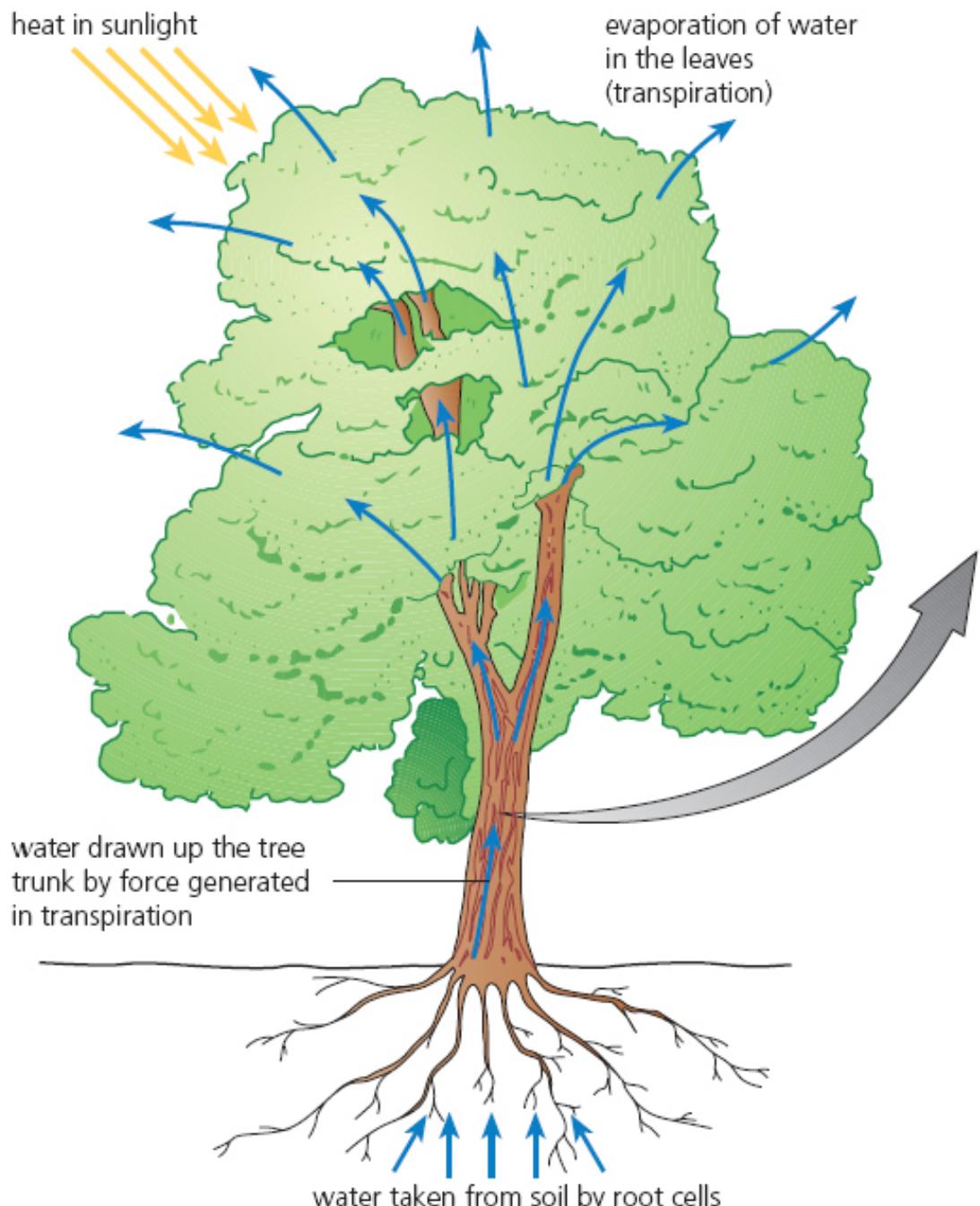
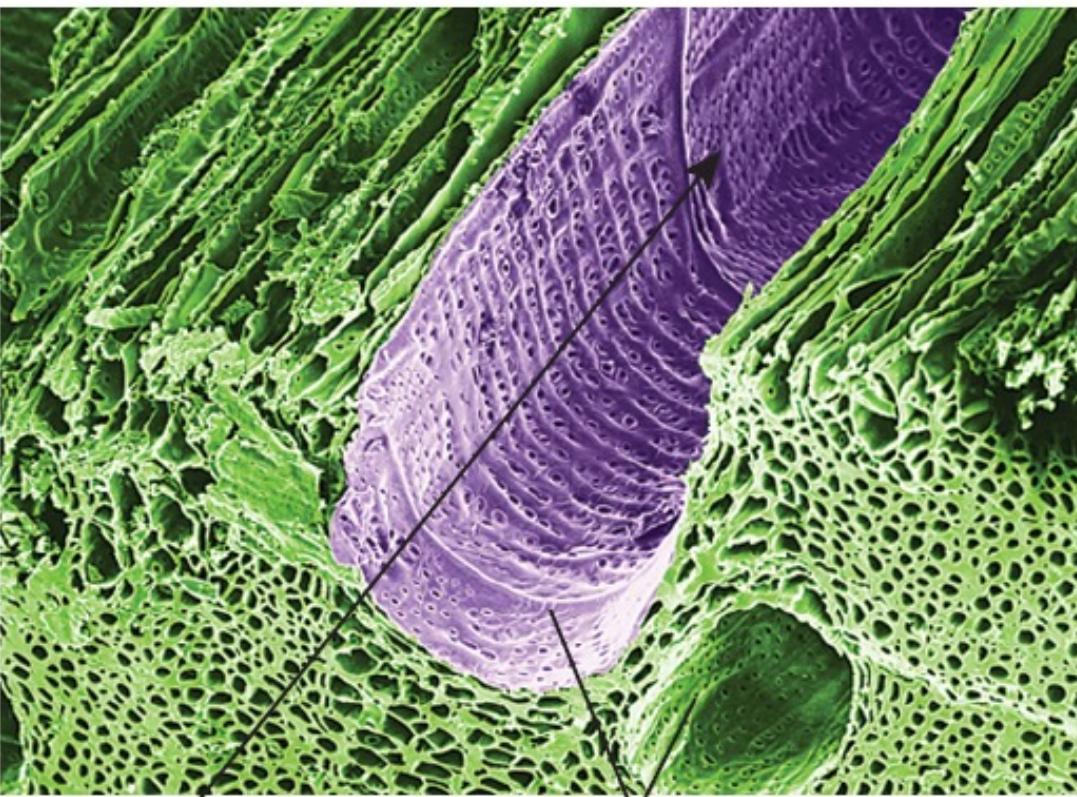


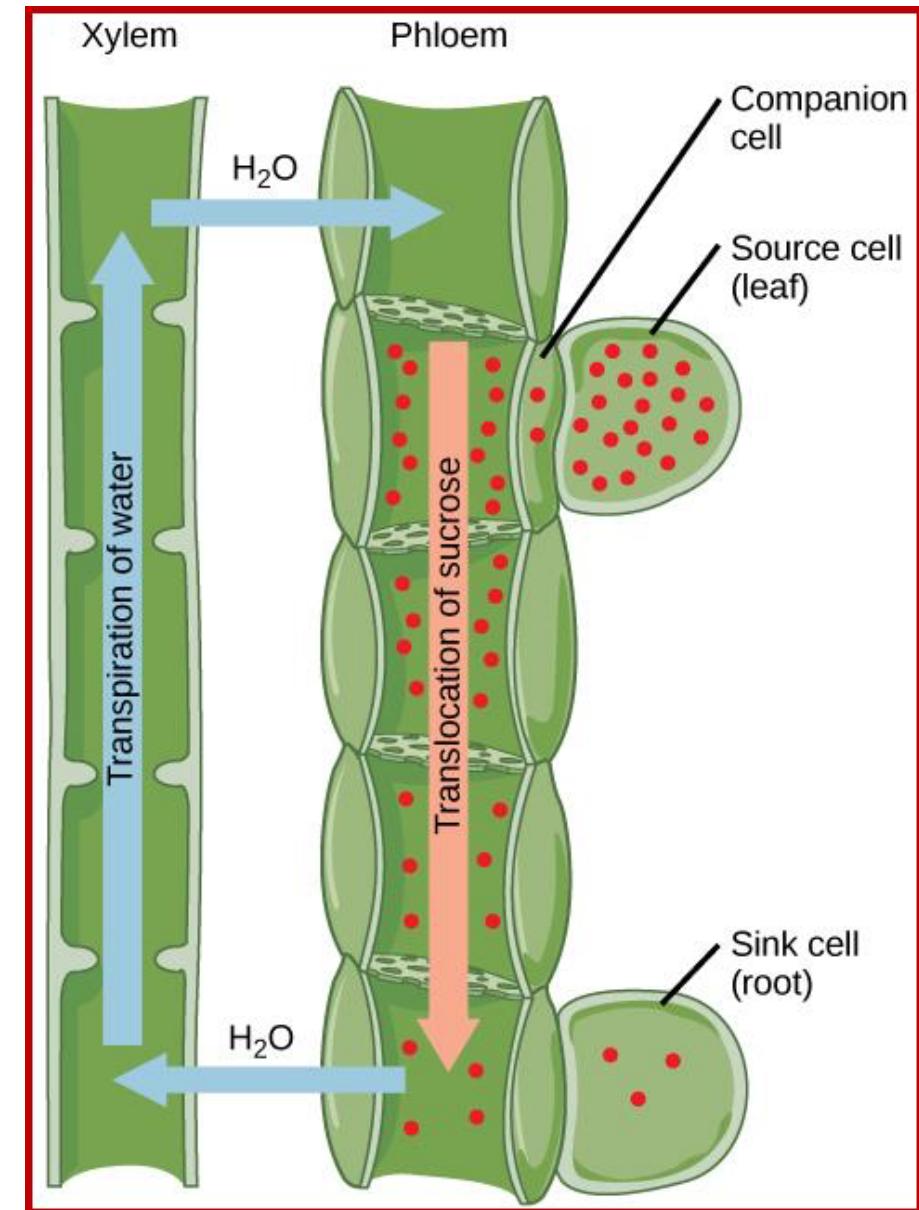
Figure 7.14 Water is drawn up a tree trunk

water can be drawn up to a great height without the column breaking off or pulling apart



the column of water coheres, adheres to the walls of the xylem vessels and flows smoothly through them (because its viscosity is low)

xylem vessels run from roots to leaves, as continuous narrow tubes



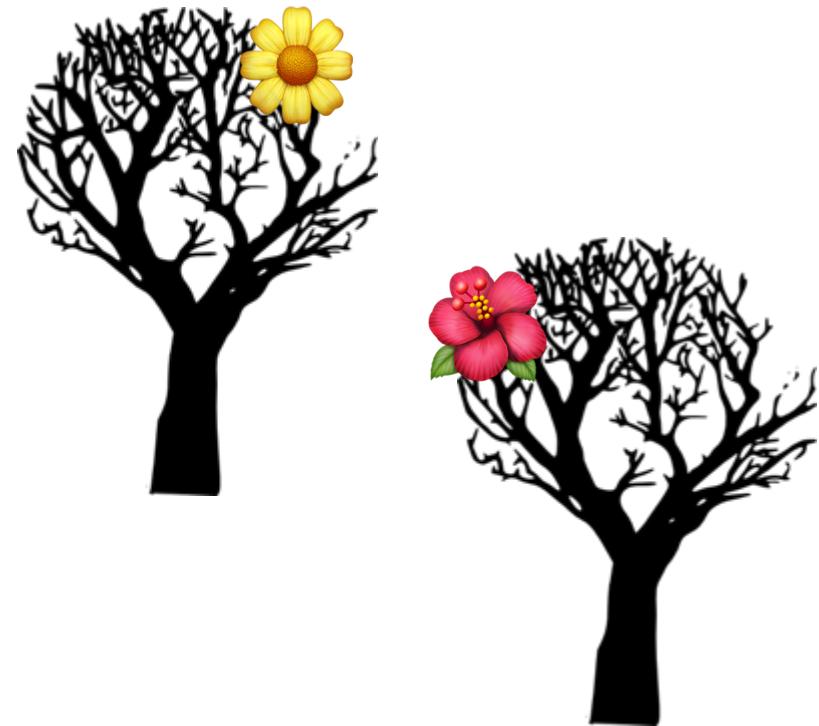
Reproduction:

Flowers to Fruits

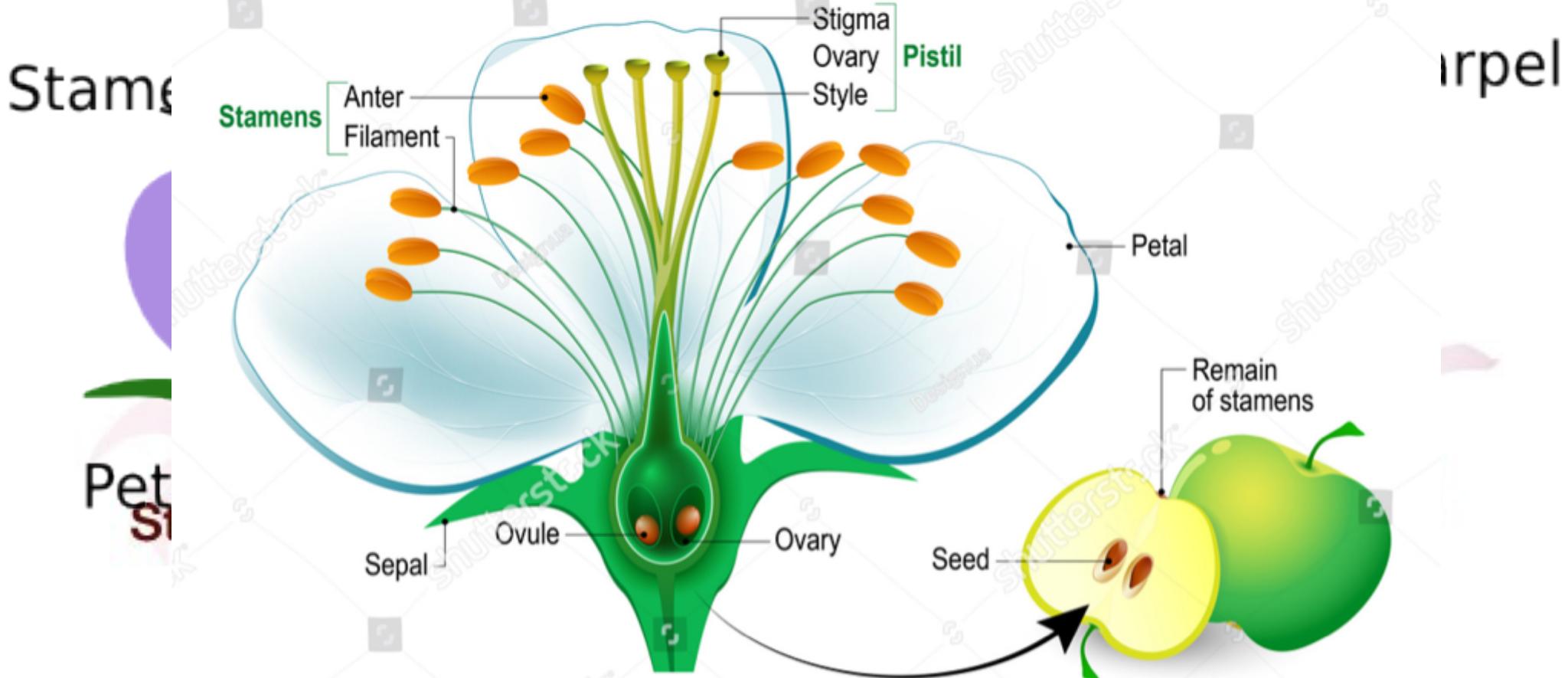
MONOECIOUS
(one house)



DIOECIOUS
(two houses)



ANATOMY OF AN APPLE FLOWER



American Linden: *Tilia americana*
(Monoecious)



Photo Credit: Suz Mrozak

Sugar Maple: *Acer saccharum*
(Monoecious or Dioecious)

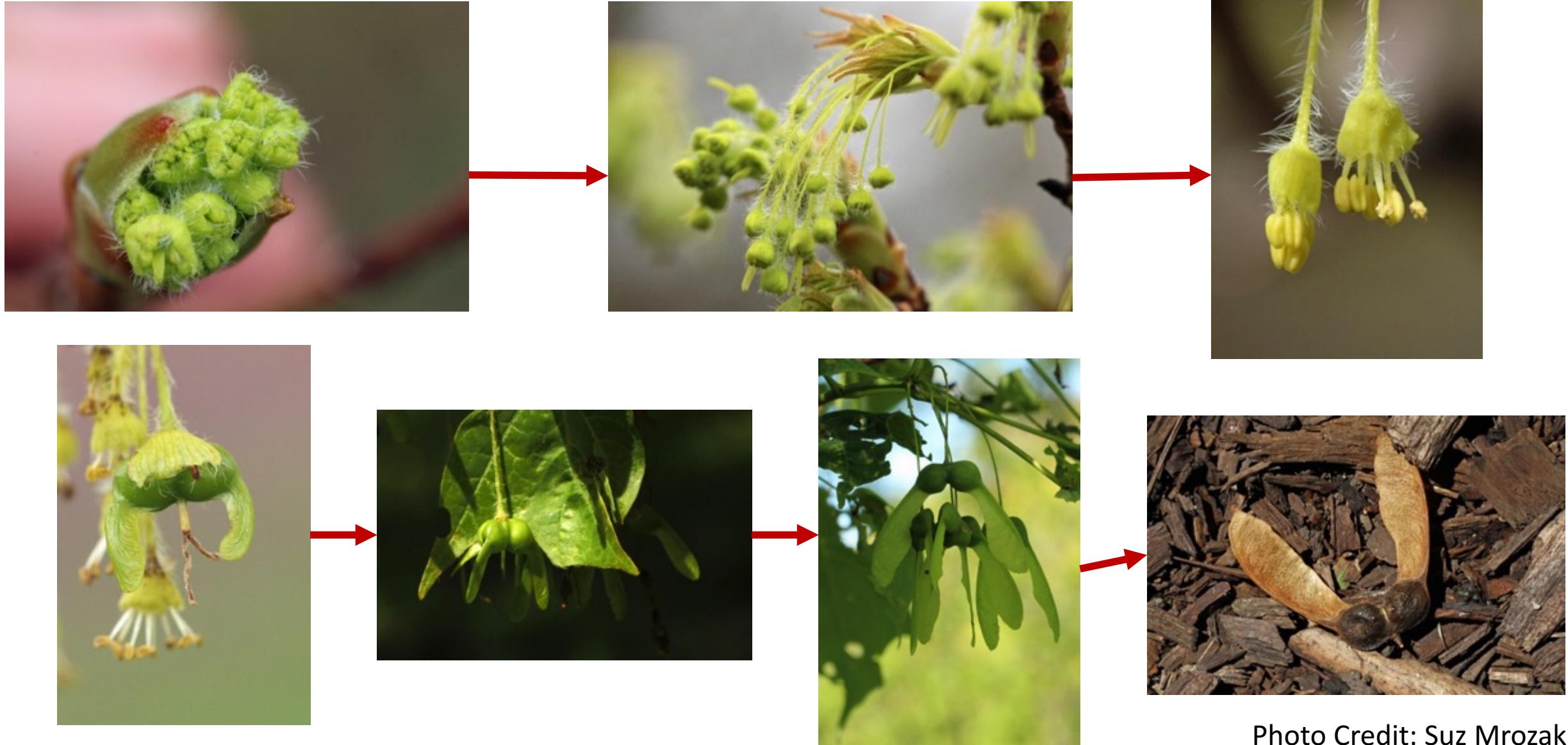


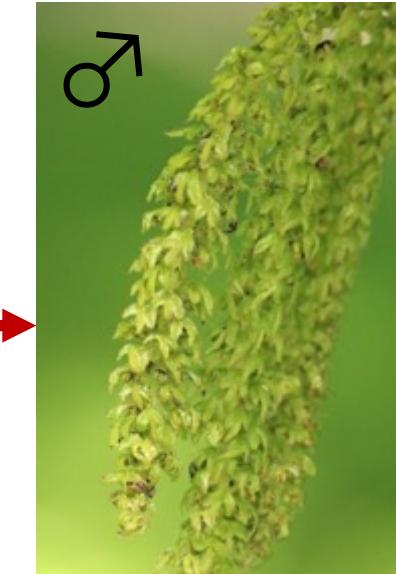
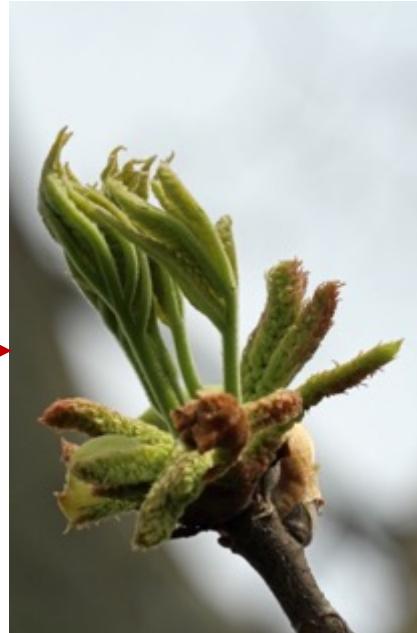
Photo Credit: Suz Mrozak

American Beech: *Fagus grandifolia*
(Monoecious)



Photo Credit: Suz Mrozak

Shagbark Hickory: *Carya ovata*
(Monoecious)



♀



Photo Credit: Suz Mrozak

White Oak: *Quercus alba*
(Monoecious)

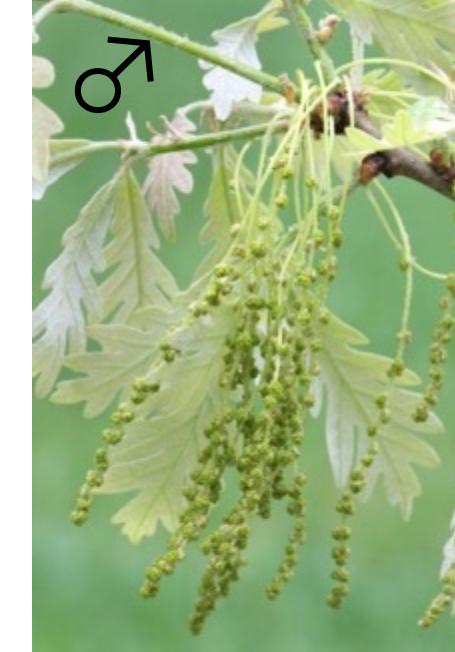


Photo Credit: Suz Mrozak and Go Botany

River Birch: *Betula nigra*
(Monoecious)



Photo Credit: Suz Mrozak

Eastern Cottonwood: *Populus deltoides*
(Dioecious)

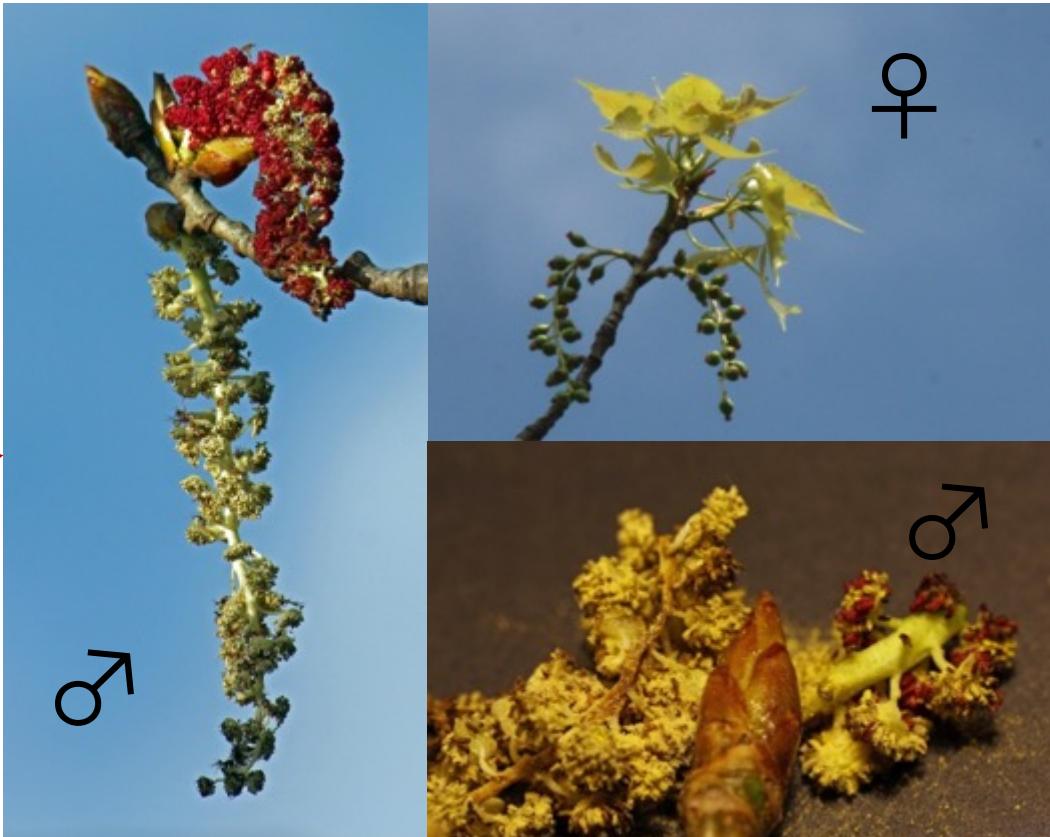


Photo Credit: Suz Mrozak

Yellow Buckeye: *Aesculus flava*
(Monoecious)



Photo Credit: Suz Mrozak

DEFINITIONS SHEET

General Terms:

- **TEMPERATE:** a region or climate characterized by mild temperatures
- **PHYSIOLOGY:** the study of the normal functions of living organisms and their parts
- **PHENOLOGY:** the timing of recurring life history events
- **DECIDUOUS:** a tree or shrub that sheds leaves annually
- **COLD HARDINESS:** a plant's ability to resist freezing temperatures
- **ANGIOSPERMS:** flowering plants, includes herbs, shrubs, grasses and most trees
- **GYMNOSPERMS:** a plant with seeds unprotected by a fruit, includes conifers, cycads, and ginkgo

Plant Functioning:

- **PHOTOSYNTHESIS:** the conversion of light energy to chemical energy by pigments that use water and CO₂ to produce carbohydrates
- **RESPIRATION:** when glucose and oxygen combine to produce useable energy
- **STOMATA:** pore in leaf that controls gas exchange (water & CO₂)
- **VASCULAR:** plant tissues that conduct water, sap, and nutrients in flowering plants
- **XYLEM:** vascular tissue in plants that conducts water upward from the roots to the leaves and helps with support (unidirectional)
- **PHLOEM:** vascular tissue in plants that conducts sugars and carbohydrates from the source to the sink (bidirectional)
- **POLLINATION:** process of pollen being transferred to the female reproductive organs of the plant

Reproduction:

- **MONOECIOUS:** male and female flowers on same individual
- **DIOECIOUS:** male and female flowers on separate individuals
- **PETAL:** give flower its shape, often brightly colored if insect pollinated
- **SEPAL:** small, leaf-like parts at base of petals. Help protect the flower before it blossoms
- **PEDUNCLE:** stem or stalk of a flower
- **PISTIL:** female organ of the flower
 - **Stigma:** head of pistil, receives pollen
 - **Style:** stalk of the pistil
 - **Ovary:** base of pistil
 - **Ovules:** eggs of the flower, grows into a seed eventually
- **STAMEN:** male organ of the flower
 - **Anther:** head of stamen, produces pollen
 - **Filament:** holds the anther