

- Welcome/** Staff/Volunteer Names
- Introduction:** **Today's Topic-Flowering Plants**  
**Question: Why do many plants have flowers & fruit?**
- Game:** **Flower Frenzy**-The students see how quickly they can get in formation to build a flower.
- Background/** **Flower Observation & Dissection-**  
**Exploration:** Cover basic flower parts and talk about each part and its function.
- sepals**-cover and protect bud (1<sup>st</sup>/outermost ring-color green)
  - petals**-attract pollinators (2<sup>nd</sup> ring-color of choice)
  - stamens**-have anthers/pollen (3<sup>rd</sup> ring-color yellow or orange)
    - filament**-supports anther
    - anther**-holds pollen
  - carpel**-each has ovules/seeds in chamber (4<sup>th</sup> ring-color of choice)
    - style**-stalk on top of pistil, supports stigma
    - stigma**-top of pistil, receives pollen (can be sticky)
- Flowers have one, several, or many carpels, which may be fused together (e.g. apple)
- “**Tepals**”-In some flowers, especially lilies, the sepals and petals look alike.
- Some plants’ flower petals and/or sepals are fused together into cup or funnel shapes.
- The ring of petals is called the **corolla**, the ring of sepals is called the **calyx**.
- Not all flowers have all these parts, some don’t have petals (or sepals, etc.).
- Ask why bees are attracted to flowers. (colored petals, scent, and nectar)
- Flowers are adapted by their shape, color and arrangement for different pollinators.
- Red-Hummingbirds; Yellow, Blue, Lavender-Bees; White-flies, moths (butterflies)
- Ask what other ways flowers are pollinated (wind, water, moths, beetles, bats)
- What would pollinate white flowers that smell stronger at night? (moths, bats)
- Discuss how pollen is spread by pollinators and collected on bee legs (show picture).
- Do pollinators see colored petals?
- Other insects, like bees, see a different range of the light spectrum than humans.
  - Many flowers have **nectar guides**-patterns on petals or shape of petals or flower that help bees and other pollinators find nectar and pollen.
  - Some patterns made by ultraviolet light are seen only by bees and butterflies.
- Briefly discuss the importance of flowering plants vs. non-flowering.
- Discuss the importance of plants for all life.
- OUTDOOR**
- EXPLORATION:** Look for different kinds of wildflowers and help students **identify** them.
- Tell a Native American story or legend about the coming of spring.
- Introduce spring **ephemeral** ecology:
- Plants live entire life cycle before trees leaf out-get more sun, pollinators can find them.
- Who pollinates each flower? (flies, ants, beetles, bees, birds, butterflies)
- Review the **layers of a forest**.
- Activity:** “**Mexico to Alaska**” -Investigate different slopes for variation in woodland habitats.
- Take measurements of temperature, wind speed, and soil moisture\* three places.
- Discuss sun effects on timing of blooming on different slopes (S & SW first, N & NE later).

People throughout history have learned by their experience in using plants.

**PLANTS have been & some still are our main source of medicines.**

Wild plants were Native American & pioneer food, having medicinal & other uses.

Stress NOT to pick & eat anything from the wild if not **100%** sure.

**Send Off:** Goodbye!

**Take Home:** Flower diagram  
Flower pressing/drying

## Vocabulary

Sepal, petal, stamen, anther, filament, carpel, style, stigma, tepal, ephemeral, slope, corolla, calyx, nectar guides, ultraviolet light

## Flower References

[http://www.cals.ncsu.edu/course/ent591k/nectar\\_guide.html](http://www.cals.ncsu.edu/course/ent591k/nectar_guide.html) Nectar guides in normal/ultraviolet spectrum  
<http://wwwebexhibits.org/causesofcolor/17C.html> Normal/ultraviolet images of flower and butterfly  
<http://www.extension.iastate.edu> Butterfly hibernation box plans-ISU Extension Office, Ames, IA 50011.

Forey, Pam. 1994. *Science Nature Guides: Wild Flowers of North America*. Thunder Bay Press, San Diego.  
Wildflower pictures/descriptions, experiments with plants; Pp. 52-53 flower pressing & drying  
*Iowa's Plants*. 1994. Iowa Association of Naturalists Booklet Series. ISU Press, Ames, IA. (IAN-301- -307)  
*Iowa's Spring Wildflowers* (IAN-301); <http://www.extension.iastate.edu/pubs/wi.htm>  
Runkel, S.T., and Bull, A.F. 1979. *Wildflowers of the Iowa Woodlands*. Iowa State University Press, Ames.  
Good photographs, basic information, and food/medicinal uses of each plant.

## Importance of Flowering Plants or Angiosperms

Flowering plants developed over a long period of time, and are now very diversified, with over 350,000 species. They are successfully adapted for protection of their seeds from predation and desiccation, as well as pollination (wind, water, insect, bird, bat) and seed dispersal (gravity, wind, water, bird, animal). Mosses, ferns, and other "primitive" plants need water for reproduction, as male reproductive cells travel through water and are sensitive to drying out. These plants need to live where there is sufficient moisture. Also, a second plant is necessary for the life cycle to be complete (gametophytes-N and sporophytes-2N). In flowering plants, the entire life cycle can take place using one plant, which has the full amount of DNA. The pollen and ovules have half the DNA, but don't need to survive on their own. In many species, pollen is adapted for traveling long distances without drying out. Many flowering plants attract pollinators with attractive petals, fragrance, and nectar. These plants often form fruit (the developed ovary) to be eaten, which takes advantage of animals (and humans) for seed dispersal.

Life Cycle: seed sprouts roots, then leaves, grows, flowers develop, flowers cross-pollinate or are assisted by insects/animals, seeds develop and mature, seeds disperse, seeds sprout...