



Pollinators

Raccoon Creek Explorers Activity #21

Supplies:

- Paper
- Writing utensil
- Your observation skills
- Optional: flower or bug identification guild. App: 'Seek' by iNaturalist (helps identify different species)

Vocabulary:

Pollinator: Anything that helps carry pollen from the male part of the flower (stamen) to the female part of the same or another flower (stigma)

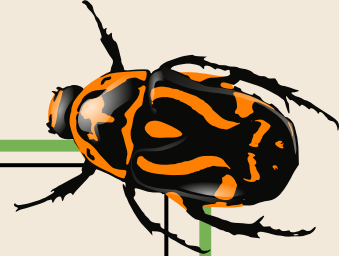
Coevolution: The influence of closely associated species on each other in their evolution.

Pollination Syndromes: The various flower traits associated with different pollinators

Background:

Plants produce flowers in order to reproduce. Once they are pollinated they can produce seeds that can be dispersed to continue their life cycle. While some plants can self pollinate, many need the help of other organisms to pollinate them. These organisms are called pollinators. While many people think of bees and butterflies as pollinators there are many others as well, such as beetles, wasps, moths, birds and even bats! Pollinators don't just help plants without reward, they get nectar or pollen in return. Plants have to compete with other plants to attract pollinators, so they use visual cues such as showy petals, nectar guides, shape, size and color. They also use scent, food, mimicry, and entrapment to attract pollinators. Many flowers have coevolved with a particular pollinator so they only attract that type of pollinator. The large flowers of American lotus are easily seen from afar and provide a broad landing area for beetles. As well the azaleas are uniquely shaped for a ruby-throated hummingbird to sample the nectar and contact the exerted stamens and stigma. These coevolved traits are known as pollination syndromes. Below is a list of different pollinators and the characteristics they have that flowers must attract.





Pollinator	Pollinator Characteristics
Bee	Attracted to blue and yellow colors and ultraviolet light; dexterity at manipulating plant parts, ability to strongly vibrate by buzzing, need for both nectar and pollen.
Beetle	Attracted to dull white or green bowl-like flowers as well as strong fruity smells, needs landings space as they don't hover
Butterfly	High nectar needs, require sunlight for flying, long tongues
Hummingbird	Long bills, highly developed ability to perceive red, high metabolic needs, ability to hover.
Moth	Often fly at night, sensitive to fragrance, ability to hover.
Flies	Attracted to odors (sometimes unpleasant to humans), generalists.

Let's Get Started:

- 1.) Create a chart on your paper. One column labeled "Pollinators", one labeled "Flower Characteristics". Add rows as needed.
- 2.) Go outside and walk around a garden and observe different flowers. For each flower you find with a pollinator on it, write down what pollinators are on it and write down the different characteristics of the flower (shape, smell, color, etc.)

Reflect:

What was the most common pollinator found?

How many different pollinator species did you find?

What pollinators were found on what species of flowers?



Apply:

Why would some flowers have physical attributes that attract specific pollinators but not others?

Are there flowers that attract more than one type of pollinator?

Are there other ways plants can be pollinated without other organisms?

Wrap-Up:

Flowers attract specific pollinators using characteristics suited best for the pollinators' characteristics. By attracting only specific species of pollinators the plant can have a more reliable pollen transfer. If the animal can rely on only one food source it will be loyal to this kind of plant and neither waste its pollen while visiting different species, nor waste its own energy and time visiting less specialized blossoms where other visitors might have emptied out all pollen or nectar before.

Organisms and self pollination are not the only ways plants can rely on reproduction, some plants can be pollinated by wind and water as well. Pollen can be transferred by the wind to other plants of the same species, and some aquatic plants can transfer their pollen by releasing it into the water to be carried to other plants.

Now you have learned that there are more than just the main pollinators like bees and butterflies. Other pollinators are important to protect as well. If you have the space and ability to, try planting a pollinator garden using many different species of flowers that have different shapes, colors and smells to attract all different types of pollinators.

