

## FLOWER MODIFICATIONS FOR POLLINATION

### Material:

Examples of flowers: wind pollination (grass, conifer), animal pollination (snapdragon), bee pollination (snapdragon), butterfly pollination (milkweed), beetle pollination (peonies), fly pollination (yarrow), hummingbird pollination (columbine), and bat pollination (saguaro) gathered by the teacher and/or the children.

Flower Modifications for Pollination cards.

### Presentation:

1. Share the flowers with the children.
2. Ask the children if they can name or describe the flowers regarding the shape of the corolla.
3. Ask the children if they can name or describe how the flowers have been modified for pollination. The shape of the corolla determines what animals may pollinate the flower or if the wind may pollinate the flower: wind pollinated flower, animal pollinated flower, bee pollinated flower, butterfly pollinated flower, beetle pollinated flower, fly pollinated flower, hummingbird pollinated flower, and bat pollinated flower.
4. Name the types of pollination.
5. Discuss the functions of wind and animal pollination of the flowers:

- A. **Flower Modifications for Pollination** - Flowers may be modified to allow for a particular method of pollination.
- B. **Wind Pollinated Flower: Anemophily** - The wind pollinated flower is a small flower with no fragrance. The wind pollinated flower produces great quantities of pollen. Plants with wind pollinated flowers grow close together to allow for the wind to carry the pollen to another flower of its own kind and for pollination to occur. Grasses, oak trees, willow trees, and walnut trees are plants that are wind pollinated. Conifers are non-flowering plants that are wind pollinated.
- C. **Animal Pollinated Flower: Zoophily** - The animal pollinated flower is very colorful with a fragrance or strong odor. The animal pollinated flower often has nectar and less pollen than the wind pollinated flower. The animal pollinated flower needs to attract an animal for the pollen to be carried to another flower of its own kind and for pollination to occur. Bees are the most common animal pollinator.
- D. **Bee Pollinated Flower: Melittophily** - The bee pollinated flower is a flower that is pollinated by a bee. The bee pollinated flower is usually blue, yellow, or purple with a fragrance. The bee pollinated flower may be a tight tube or have longer petals on the bottom for the bee to land on. The bee pollinated flower may also have markings called honey guides that guide the bee to the nectar. The snapdragon is an example of a bee pollinated flower.

- E. Butterfly Pollinated Flower: Psychophily** - The butterfly pollinated flower is a flower that is pollinated by a butterfly. The butterfly pollinated flower is usually red or orange with a fragrance. The butterfly pollinated flower may be tube-shaped as the butterfly has a long tongue it can insert deep into the flower. The butterfly pollinated flower may be flat-topped as the butterfly likes open places where it can drink nectar. The butterfly pollinated flower may be a flower capitulum or other inflorescence as the butterfly can drink nectar from many flowers at one stop. The milkweed and the goldenrod are examples of butterfly pollinated flowers.
- F. Beetle Pollinated Flower: Cantharophily** - The beetle pollinated flower is a flower that is pollinated by a beetle. The beetle pollinated flower is usually dull-colored or white with a strong fragrance or odor. The beetle pollinated flower may be bowl-shaped, vase-shaped or flat-topped clusters. The beetle chews on flower parts and eats pollen, so the flowers have inferior ovaries. Peonies are examples of beetle pollinated flowers.
- G. Fly Pollinated Flower: Myophily** - The fly pollinated flower is a flower that is pollinated by a fly. The fly pollinated flower is dark-colored with a strong odor. The fly pollinated flower is open or a flat-topped cluster as some flies have short tongues while others have long tongues. Rafflesia, milkweed, and yarrow are examples of fly pollinated flowers.

**H. Hummingbird Pollinated Flower: Ornithogamy** - The hummingbird pollinated flower is a flower that is pollinated by a hummingbird.

The hummingbird pollinated flower is red or yellow with little or no fragrance. The hummingbird pollinated flower is tube-shaped with lots of watery nectar rich in carbohydrates. Columbine and larkspur are examples of hummingbird pollinated flowers.

**I. Bat Pollinated Flower: Chiropterogamy** - The bat pollinated flower is a flower that is pollinated by a bat. The bat pollinated flower is dull-colored and large with a fruity fragrance. The bat pollinated flower has a wide corolla with lots of nectar and grows away from the leaves of the plant. The bat has a long tongue and a long, thin muzzle to reach into the corolla. The baobab and the saguaro are examples of bat pollinated flowers.

6. Encourage each child to repeat the functions of the flower modifications for pollination.
7. Have the children observe or collect specimens from nature that depict these functions.
8. Allow the children to draw or in other ways render what they observe.
9. Lay out the pictures of the flower modifications for pollination.
10. Distribute the labels for the children to match to the pictures.
11. When the children know the definitions of the flower modifications for pollination, distribute the definitions for the children to read and to match to the pictures.
12. Display the wall chart.

13. Place the Flower Modifications for Pollination classified nomenclature material on the shelf.
14. Place the Flower Modifications for Pollination booklet on the shelf.
15. Follow-up activities for the child:
  - A. Match the picture and the label (simple nomenclature).
  - B. Match the picture, the label, and the definition card (classified nomenclature).
  - C. Make a booklet of the Flower Modifications for Pollination. The children write the definitions in their own words.
  - D. Make a chart of the Flower Modifications for Pollination.
  - E. Research flowers for the different flower modifications for pollination.

Raven, Peter H., Evert, Ray F., and Eichhorn, Susan E., Biology of Plants, Sixth Edition, Published by W.H.Freeman and Co., New York, pages 530 - 542.

Chart 15: Love in Plants: Bee Sucking Nectar

