WILD at Schools: Busy Bees
Wildlife and Heritage Service

This free, 50-60 minute program is for grades 2 & 3 and is designed for a classroom and larger space. Optional activities include: outdoor investigation of flowers and pollinators (if weather and season permits) or build a pollinator activity. This activity has been adapted from Project WILD.

Learning Objectives

As a result of this program, students will be able to:

- Describe role of bees in pollination.
- Describe some of the diversity of bees, including sweat, squash, bumble and honey bees.
- Explain the habitat and survival needs of different bee species.
- Understand the importance of bee and flower diversity.
- Optional: investigate local flowers and pollinators or build a pollinator.

Concepts to be covered:

2nd grade focus (NGSS): Role of bees in pollination.
3rd grade focus (NGSS): Bees can form groups to help survival.

Curriculum Standards and Science & Engineering Practices Addressed

Grade	Standard	Detail	Program
2	2-LS2-2 ETS1-2	Develop a simple model that mimics the function of an animal in pollinating plants. Develop a simple sketch or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	Students mimic the process of pollination Optional: students build a physical model to demonstrate how different pollinators solve the problem of obtaining nectar from diverse flowers.
3	3-LS2-1 3-LS4-3 ETS1-2	Construct an argument that some animals form groups that help members survive. Construct an argument that in a particular habitat some organisms can survive well, some survive less well and some cannot survive at all. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	Students compare social and solitary bees as a survival strategy. Students understand that bees need different flowers to survive. Optional: students build a physical model to demonstrate how different pollinators solve the problem of obtaining nectar from diverse flowers.
Engineering and Science Practices		Use a model that represents a concrete event. Conduct simple investigation to describe relationships in the natural world to answer scientific questions.	Students model bee pollination Optional: students explore an area to investigate which plants bees visit.

Program Summary

1. Introduction to bees and their anatomy including special adaptations to carry pollen.
2. Students work in teams to look at insect specimens to determine if they are bees. Students then match each bee species to their preferred flower type.
3. Students actively simulate pollination between flowers and bees.
4. *Optional:* exploration of schoolyard to look for flowers and to investigate which plants bees visit. Have students suggest ways the schoolyard could be improved for pollinators.
5. *Optional*: student teams construct a pollinator that is able to pollinate a flower with a distinctive floral design.

Key Program Vocabulary

Abdomen: the posterior (hind) body segment of an insect.

Antenna: a sensory appendage of the head.

Egg: the first stage in the bee life cycle.

Generalist: refers to bees that will visit a wide range of flower types and species to find pollen and nectar.

Habitat: the natural home of an organism consisting of four elements: food, water, shelter and space.

Larva: the second worm-like stage of the bee life cycle.

Metamorphosis: structural changes that occur through developmental stages. Complete metamorphosis has four stages: egg, larva, pupa and adult.

Nectar: sugary fluid secreted by plants to encourage pollination.

Pollen: microscopic grains discharged from the male part of a flower that can fertilize the female ovule.

Pollination: the transfer of pollen between plants of the same species.

Pollinator: an animal that passes pollen from male to female flower parts of flowers.

Proboscis: an elongated, sucking mouthpart that is typically tubular and flexible.

Pupa: the third non-feeding stage in the bee life cycle.

Social: refers to bees that live in a colony and share in the task of raising young.

Solitary: refers to bees in which a female builds her own nest and feeds her own young.

Specialist: (oligolecty) refers to bees that exhibit a narrow, specialized preference for pollen sources, typically within a single genus of flowering plants.

Thorax: the middle body section of an insect where wings and legs are attached.