



The Friends of Flight 93 National Memorial is the official 501(C)3 non-profit that represents Flight 93 National Memorial in partnership with the National Park Service. The lessons and activities below were created for teachers and/or parents to teach children (or themselves!) about the role pollinators play in the world and about the pollinators themselves.

To help cultivate the living memorial landscape that honors the 40 passengers and crew member of Flight 93 every day, the Friends of Flight 93 have partnered with Powdermill Nature Reserve in setting up and maintaining 8 bee hives here at Flight 93 National Memorial. These 8 hives are home to over 500,000 bees. According to surveys done at the memorial in both 2016 and 2017, Flight 93 National Memorial is home to at least 63 different species of bees!

Bees play an extremely important role in balancing natural biodiversity. The symbiotic relationship between bees and all flowering plants is what balances our ecosystems. Flight 93 National memorial is a former surface coal mine. The bees help to restore the memorial grounds and the crash site to its natural state. When Flight 93 crashed on September 11, 2001, it burned nearly 40 acres of ground and trees. This area is now considered sacred ground and the final resting place of the 40 passengers and crew members. The Pollinator Project will help ensure that the natural habitat and ecosystems of the memorial are environmentally restored and will help create a living memorial landscape that will continue telling the story of Flight 93 for generations to come.

Several [passengers on United Flight 93](#) were passionate about the environment and a handful were traveling for personal trips that involved the outdoors. *Alan Beaven* was an ardent environmental litigator who prosecuted Clean Water Act violators. *Richard Guadagno* spent 17 years in environmental protection as a member of the U.S. Fish & Wildlife Service. *Christine Snyder* was an arborist and worked for The Outdoor Circle, Hawaii's oldest nonprofit environmental group. Four passengers were traveling to Yosemite National Park (*William Cashman, Patrick Driscoll, Donald & Jean Peterman*) to hike and enjoy the beauty. *Donald Greene* was headed to Lake Tahoe for the same reasons. As the living memorial landscape at Flight 93 National Memorial is restored, we honor all 40 passengers and crew members.

The Friends of Flight 93 National Memorial website provides a wealth of additional information, not only on the pollinators, but also about the events on 9/11, the Story of Flight 93, and Flight 93 National Memorial. We encourage you to explore this website for further education resources.

Friends of Flight 93 National Memorial website: <https://www.flight93friends.org/>



The Friends of Flight 93 National Memorial are working with the [Pollinator Project](#)! As part of the Friends Pollinator Project at the memorial, we have purchased a BeeSmart Garden Kit from the Pollinator Project! If you would like to purchase your own kit, please visit: <https://www.pollinator.org/bee-smart>

To receive an emailed copy of ANY of the lessons listed below, simply email Learning Center Coordinator Danielle Miller (dmiller@Flight93NationalMemorial.org) and indicate which lesson you would like to receive. It is THAT EASY!

Lesson ONE: Meet the Pollinators!

BRIEF DESCRIPTION

Students will complete a brief survey assessing what they already know about pollinators. These surveys should not be graded; they are simply a tool to help educators gauge the success of the BeeSmart™ School Garden Kit in teaching students about pollinators and they will be compared to the post-assessment at the end of the curriculum in Lesson 10. Your students will not know many of the answers at this point in the process, but the pre- and post-tests will be used to see how much they eventually know about pollinators, plants, and food.

OBJECTIVES

Students will:

1. Get an overview of what they will learn as they progress through the BeeSmart™ curriculum
2. Be introduced to the BeeSmart™ discovery process
3. Complete a brief survey about students' existing knowledge of pollinators



Lesson TWO: What is Pollination?

BRIEF DESCRIPTION

Students will discover the fundamentals of the pollination process and methods of how plants are pollinated.

OBJECTIVES

Students will:

1. Learn the basic process of pollination
2. Be able to differentiate between the various methods of pollination
3. Understand that flowers have different shapes that link to their method of pollination
4. Discuss the benefits of services provided by pollinators, and how pollinating
5. their own food source may also benefit these animals

Lesson THREE: Bee Pollination and Anatomy

BRIEF DESCRIPTION

Bee pollination is the primary pollination method covered in the BeeSmart™ School Garden Kit. Bees are also the most effective pollinators because their reproductive system requires pollen collection to feed developing young. This lesson plan will explore the bee pollination process, bee anatomy, and the benefit of bees.

OBJECTIVES

Students will:

1. Discover how the bee pollination process occurs by role playing the parts of plants and bees
2. Complete the accompanying worksheet to describe the process of bee pollination using new vocabulary terms, diagramming bee anatomy, and working through bee pollination math problems



Lesson FOUR: Pollinators and Food

BRIEF DESCRIPTION

Students will explore connections between pollinators, plants, food, and people.

OBJECTIVES

Students will:

1. Understand our dependence on pollinators for much of our diet
2. Be able to name foods people eat that need pollinators

Lesson FIVE: Seed Germination

BRIEF DESCRIPTION

Students will germinate, plant, tend, and care for their own seeds. Students will learn about plant anatomy and about the intertwining life cycles of pollinators and plants as they monitor the growth of their seedlings.

Teacher Notes: Growing seeds and checking on them will require subsequent daily sessions of approximately 5 minutes each. A good time to check could be before the first bell of the day or just before lunch. The Seed Germination lesson should be scheduled for early spring to ensure enough time for seed and garden growth.

OBJECTIVES

Students will:

1. Learn the basic conditions seeds need to sprout and mature
2. Demonstrate that seeds sprout and grow into plants
3. Identify plant parts and their relationship to specific pollinators



Lesson SIX: Basic Bee Identification

BRIEF DESCRIPTION

Students will learn about the diversity of bees, how to identify several basic bee types, and the characteristics that make a true bee.

OBJECTIVES

Students will:

1. Discuss concepts of biodiversity and bee diversity
2. Learn how to identify several basic bee types, including males from females
3. Compare the various bee types from other insects

Lesson SEVEN: Pollinator Habitat

BRIEF DESCRIPTION

Like people, pollinators need homes. This lesson will address the various types of pollinator habitats and what makes a healthy and inviting pollinator home.

OBJECTIVES

Student will:

1. Discuss what things are essential for human survival
2. Learn what is essential to pollinator survival
3. Compare human and pollinator essentials for life
4. Discuss what a habitat provides its inhabitants

Lesson EIGHT: Bee Habitat

BRIEF DESCRIPTION

After receiving an overview of pollinator habitat, students will learn specifically about bee habitat, essentials for bee life, and bee hives.

OBJECTIVES

Students will:

1. Review what they learned about pollinator habitat essentials
2. Learn about the parts of a hive and how they function
3. Learn about bee tube nests and where they can be placed



Lesson NINE: Planting Outside

BRIEF DESCRIPTION

This lesson plan provides general guidelines for planting the cucumber seedlings started in the classroom, and for learning about seedling care. If school space allows, students will plant seedlings in a designated BeeSmart™ School Garden, if not, students will take seedlings home for planting.

OBJECTIVES

Students will:

1. Learn about proper care of their seedlings (at school or at home)
2. Plant their seedlings on school grounds

Lesson TEN: Round Up

BRIEF DESCRIPTION

This is the last lesson for the classroom portion of the BeeSmart™ School Garden Kit. Students will share what they have learned about pollinators during the BeeSmart™ discovery process over a pollinator-built snack and complete the post assessment.

OBJECTIVES

Students will:

1. Complete the post-assessment
2. Learn what they can do outside the classroom to help conserve pollinators
3. Share how their attitudes towards insects and other pollinators may have changed
4. Review new vocabulary learned throughout the BeeSmart™ discovery process
5. Discuss how important pollinators are to the foods we eat while enjoying a pollinator-built snack

Additional Resources Available UPON REQUEST!

- Bingo Cards
- Buggy Word Problems
- Crossword Puzzle
- Caregiver Handout
- Landscape Crew Handout
- Pollinator Related Vocabulary