

Roots & Shoots Pollinator Garden Seeds

EcoTeam Lessons 5 & 6: Symbiosis & Pollination



Time needed

30 minutes for journal.
50 minutes to make seed packets.

Cost

\$20.00 initial investment (earned back through sale of seeds)

Weather requirement

None

Advance preparation

Order seeds, collect materials, prepare index cards.

Overview

The EcoTeam pollination lesson offers students the chance to explore the process of pollination and learn about the parts of the flower involved in reproduction. Students also learn about ways plants and animals depend on one another in the EcoTeam symbiosis lesson. This Roots & Shoots activity displays care and concern for animals and the environment by providing food and habitat for animals that assist in pollination. Students will distribute flower seeds to members of their school and community to help spread native flowers that provide nectar and food sources for these animals.

Background Information for Facilitator

Just as many animals depend on plants for food as plants depend on various animals for help in reproduction. Flowers offer certain animals nourishment through energy-filled nectar and protein- and vitamin-rich pollen. The animals, in turn, help the flowering plants by carrying pollen grains to the stigmas of other flowers of the same species, which is necessary for reproduction. Animals that perform this function are called pollinators; some common pollinators are honeybees, butterflies and hummingbirds.

The relationship between pollinators and flowering plants is one of the most essential mutually beneficial relationships in the natural world. Animals pollinate 75 percent of the crop plants grown worldwide for food, beverages, fibers, condiments, spices and medicines. Pollinators are also required for the successful proliferation of native plant communities and wildlife habitats.

Pollinators are in decline due to the loss, modification and fragmentation of their habitat by human activities. The extensive use of pesticides, which often kill pollinators as well as pests, and the replacement of native vegetation and wildflowers with pasture grasses contribute to the pollinator decline. These actions result in the loss of “nectar corridors” that migrating pollinators, such as butterflies and hummingbirds, rely upon. To help slow the decline in numbers of pollinators, we can create nectar-filled gardens, plant butterfly larvae food sources and cut back on pesticide use. Even a small border or window box of native, pollinator-friendly plants is helpful to pollinators. If you have the time and resources to maintain a small garden on your school grounds, there is a wealth of information available on planting schoolyard pollinator gardens (see resources). See the hints below if you are able to plant your own schoolyard habitat.

Helpful Hints

- The National Gardening Association awards 400 grants a year to schools and community centers that have kids involved in gardening. See their website: <http://www.kidsgardening.com/grants.asp>
- Help fund your garden by selling “Bug Bites,” .35 ounce chocolate pieces that highlight pollinators with educational “bug” trading cards. Made by the Endangered Species Chocolate Company: www.chocolatebar.com or (541) 535-2170.
- You can request one free packet of seeds (each additional packet is \$1.00) from the Butterfly Garden Club of America by sending a self-addressed long envelope with two first class stamps on it to:
Butterfly Garden Club of America
P.O. Box 629
Burgin, KY 40310

Materials

- Pollinator garden flower seeds
- Sandwich-sized Ziploc® bags
- Unlined 3x5 inch index cards
- Crayons, colored pencils, or markers
- Oversized paper to make posters

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Getting Ready

You can obtain pollinator garden seeds in bulk from a seed supply company. American Meadows sells a special Butterfly/Hummingbird mixture for \$14.95 (\$18.00 with shipping) for a half pound. This amount should fill 80 to 100 seed packets, which you could sell for \$0.50 or \$1.00 each. You can order from their website (see resources) or call them at (802) 951-5812 to place an order. You can also purchase seeds from a local garden supply store. Collect other materials and prepare index cards.

Doing the Activity

1. Divide students into groups of 4 or 5 and give a “Boring Barbecue Mystery” card to each group. One member of the group should read the “mystery.” Allow a few minutes for group members to discuss, then read Clue # 1. Instruct the groups to follow this procedure until all three clues have been read, and the group comes up with an explanation.
2. Go around the room and have each group share their explanation. Share this answer with the class:
Answer: Without bees, all of the foods that are missing from the barbecue would become very rare. Hanna’s family was trying to show her how important bees are to our food supply. Much of the food we eat is the result of a pollination partnership.
3. Pass out the journal pages. Discuss with students which plants the foods “missing” from the barbecue come from, record them on the board and have them record them in their journals (tomatoes, mustard seeds, watermelons, lemons, potatoes, cucumbers, onions, lettuce, apples, vanilla and sugar). Remind them that these are only some of the plants that bees pollinate and that scientists estimate one out of every three bites of food we eat comes from an animal-pollinated source.
4. Read over the rest of the journal page and let students know that you will be making “seed packets” to sell to members of your school and/or community (If you would like to break the lesson up into two sessions, this is a good stopping point). The students will be designing the instruction cards for the packets and placing them into Ziploc® bags along with the seeds. The cards should include drawings of the flowers, butterflies or hummingbirds, and the name of the seed mixture. On the back of the index cards, paste printed directions for planting and care of the flowers (you can include the EcoTeam and Roots & Shoots name here). Place one index card and approximately one tablespoon of the seed mixture in each bag (this will plant 500 sq. ft.).
5. You may want to set up a table outside of the lunch room or after school to sell your seed packets. Advertise through posters (students can also help design these) or on morning announcements-- if your school has these. Parents will be notified through the letter home for this activity.

Sample directions to paste on back of index card:

Butterfly/Hummingbird Garden Mixture

This is a specially designed mixture of 16 easy-to-grow wildflowers that butterflies and hummingbirds love. The mix includes both wild annuals and perennials, including Nasturtium, Black-eyed Susan, Purple Coneflower, and Morning Glory.

When and where to plant: Plant in spring or early summer, or in late fall after frost for spring bloom. In warm-winter areas, plant at beginning of rainy season. Choose any bright sunny spot. Providing food sources for butterflies and hummingbirds helps to slow the decline in numbers of these valuable pollinators!

Thanks from the Roots & Shoots Third grade class!



Pollinator Garden Resources

Resource Name	Website	Description
Butterflies of North America	http://www.npwrc.usgs.gov/resource/distr/lepid/bflyusa/bflyusa.htm	Region-specific butterfly information, county checklists, distribution maps and photos
Ladybird Johnson Wildflower Center	http://wildflower.avatartech.com/Plants_Online/Clearinghouse/clearinghouse.html	Region-specific native wildflower lists, native plant and seed sources listed by state
American Meadows	http://www.americanmeadows.com/bulk_mix_detail.cfm?itemid=163	Butterfly/Hummingbird seed mixture
Nectar Plants and Their Visitors	http://www.pcis.net/hwebber/source.htm	List of nectar plants and the butterflies they attract
HOSTS - Natural History Museum	http://flood.nhm.ac.uk/cgi-bin/perth/hosts/index.dsml	Database of larval host plants, search by butterfly or plant
The Butterfly Site: Butterfly Gardening	http://www.thebutterflysite.com/gardening.shtml	Butterfly gardening basics and links to helpful websites
Monarch Watch: Butterfly Gardening	http://www.monarchwatch.org/garden/guide.htm	Step by step teacher's guide to creating a school butterfly garden

Sources

Cartersville Garden Club. *Butterfly and Hummingbird Gardens*. <http://pages.prodigy.net/jwaits/bfly&hmbdgardens.html> (2 Aug. 2002).

Jackson, Camille. Hartford Advocate. *Butterfly Gardens are Free*. <http://www.hartfordadvocate.com/spring01/gardens.html> (12 Aug. 2002).

The Xerces Society. *Pollinator Conservation Program Overview*. <http://www.xerces.org/poll/overview.htm> (1 August 2002).

Vaughn, Mace. "The Xerces Society Backyard Conservation Series #4." *Butterflies*. http://www.xerces.org/butterfly_cons_info_sheet.htm (1 August 2002).



As you learned from the “Boring Barbecue,” most of the food we eat is the result of mutualism between plants and animals. Different species of butterflies, bees and hummingbirds pollinate plants by carrying pollen from the stamen of one flower to the pistil of another flower. These animals are called **pollinators**. Without them picnics and most other meals would be very dull!

Below, record the plants that were missing from the barbecue. These would become very rare if all of the pollinators disappeared.

1. Tomato plant
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Some human activities are resulting in the decline of pollinators and the plants they need to survive. Certain chemicals we use to protect food plants from pests are harmful to pollinators. We often replace the wildflowers that pollinators like with plants more useful to us, but we can help pollinators by providing them with

the flowers they need. Even a small garden of flowers will help provide food for butterflies and hummingbirds!

The special flowers that pollinators like can be grown from a seed mixture. Your class will be making packets of seeds to sell to people in your school and community. This will help spread the message about the powerful pollinators and how we can help them by planting a few flowers.



The Boring Barbecue Mystery

It is a pleasant summer evening, and Hanna's family is having a barbecue in their backyard. The menu is quite limited, though. There is no ketchup or mustard for their hotdogs, no watermelon or lemonade, no potato chips, no tomatoes, pickles, onions, or lettuce for their hamburgers, and no apple pie or ice cream for dessert. WHY?

Clue # 1 Hanna is being taught a lesson.

Clue # 2 Hanna has been learning about pollination in school.

Clue # 3 Hanna told her family that she does not like bees and wishes they didn't exist.

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the Jane Goodall Institute

Dear Parent or Guardian,

You child's class has been learning about mutually beneficial relationships in nature and the process of pollination as part of EcoTeam. We examined how plants and animals depend on one another and how flowering plants reproduce with the help of animals called pollinators. These animals (most commonly butterflies, hummingbirds and bees) pollinate 75 percent of the crop plants grown worldwide for food, beverages, fibers, spices and medicine.

Pollinators are in decline due to the loss and modification of their habitat by human activities. To help slow their decline, we can plant flowers that provide food for pollinators and their offspring. Even a small border or window box of pollinator-friendly plants is helpful. As a Roots & Shoots project, students are assembling packets of a special seed mixture that attracts butterflies and hummingbirds. This will help spread the message about the importance of pollinators, provide them with more habitat, and beautify our environment! Ask your child how you can obtain one of these packets.

Thank you for supporting our efforts to promote care and concern for the environment, animals and the human community.

Sincerely,



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