



Pollination Department

Lesson 5 Citizen Science!

The Great Sunflower Project

<http://www.greatsunflower.org/>

Essential Questions:

How can I assist scientists in better understanding the prevalence bees?

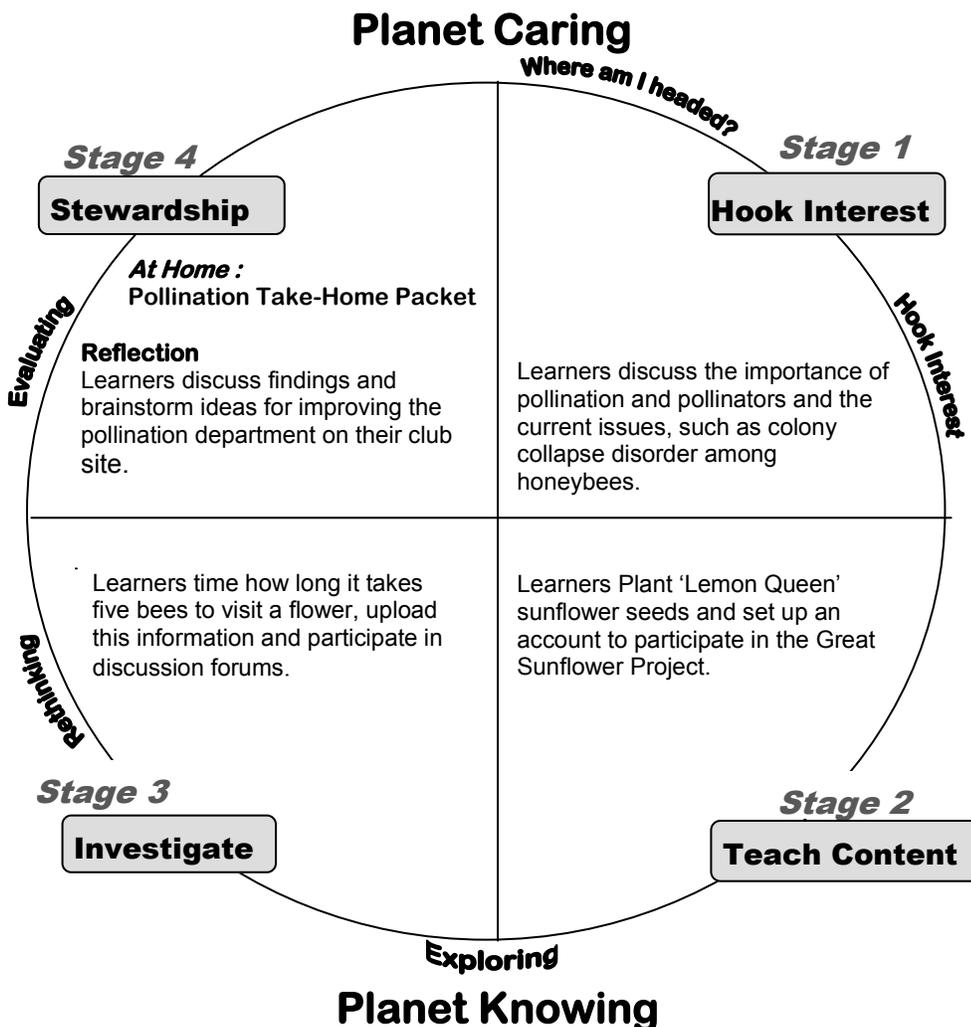
How can I be a better steward of the earth in the pollination department?

At a Glance:

Working as citizen scientists, learners participate in a nationwide project counting the number of bees that visit a certain cultivar of sunflower. Seeds are provided to registered participants or they may be purchased at garden stores. Collected data is uploaded to the website to provide entomologists with important information about population numbers of different types of bees.

Concepts:

- Bees are extremely important in the production of food and the preservation of native flora.
- Honeybees and carpenter bees are decreasing in numbers.
- Entomologists researching these issues need the eyes of citizen scientists everywhere to help them understand the issues at hand.



Objectives

Learners ...

- 1) increase their understanding of pollination and its importance in food production.
- 2) hone observations skills.
- 3) enhance understanding of the life cycle of sunflowers and other plants that can be carried over into other aspects of life.
- 4) discover the differences in bee species.

PROCEDURES IN BRIEF: Lesson 5—Citizen Science! Great Sunflower Project

Stage 1.

Procedure:

1. Ask GEN club members to share their favorite summer fruits or favorite flowers. Guide learners in imagining how that fruit or flower came to be - from a seed that was dispersed into nutritious soil and watered by rain, through germination, growth of the plant, flowering, pollination, fruit formation and ripening, and then back to seed. Lead them in a discussion about the importance of pollination and pollinators in the production of these plants.
2. Ask learners to imagine the world without pollinators and share their thoughts.
3. Give them statistics of the decrease in numbers of pollinators due to current issues, such as Colony Collapse Disorder among honeybees or the loss of habitat for pollinators due to development in a particular area.

Stage 2

1. Use a computer to visit the Great Sunflower Project website (see Resources and Links).
2. Set up an account for your GEN club. Upload information about the area in which your 'Lemon Queen' sunflowers are to be planted.
3. Order 'Lemon Queen' seeds from the Great Sunflower Project website or purchase them from a local garden store.
4. Sow the seeds in prepared soil in a sunny area. Water the seeds in and wait for germination. Once the new plants emerge, water them daily. Flowers should appear 100 days from seed sowing. Plants may be started indoors if equipment is available and planted when weather is seasonally appropriate. This is a wonderful opportunity to observe and incorporate lessons about the life cycle of sunflowers and exercising in measuring and graphing growth rates.

Stage 3

1. Show learners pictures of different bees, wasps and flies so they will know the difference. Arrange a schedule among your club members to take turns watching sunflowers for visitations from bees. When it is their turn, learners will watch a sunflower and time how long it takes five bees to visit the flower that they are watching. More insects are likely to be seen at time of day that are warmer and on days that are sunnier.
2. Enter collected data along with a description of your garden on a form online or print a form and send it by mail to the Great Sunflower Project.

Stage 4 *Reflection*

1. Participate in discussion forums at the Great Sunflower Project website and review postings of project participants. Discuss findings among GEN club members and brainstorm ideas for improving the pollination department of their club site.

Supplies

- flowers to use as a visual or fruit that can be shared for snack
- Computer and internet connection
- 'Lemon Queen' sunflower seeds
- prepared soil in a sunny area
- water source
- timer

Resources and Links

- Great Sunflower Project
<http://www.greatsunflower.org/>
- Honey bee info
<http://www.ent.uga.edu/Bees/>
<http://honeybee.tamu.edu/>
- Colony Collapse Disorder info
<http://www.nrdc.org/wildlife/animals/bees.asp>