



Pollination Department

Lesson 4 - Traveling Pollinators

Essential Questions:

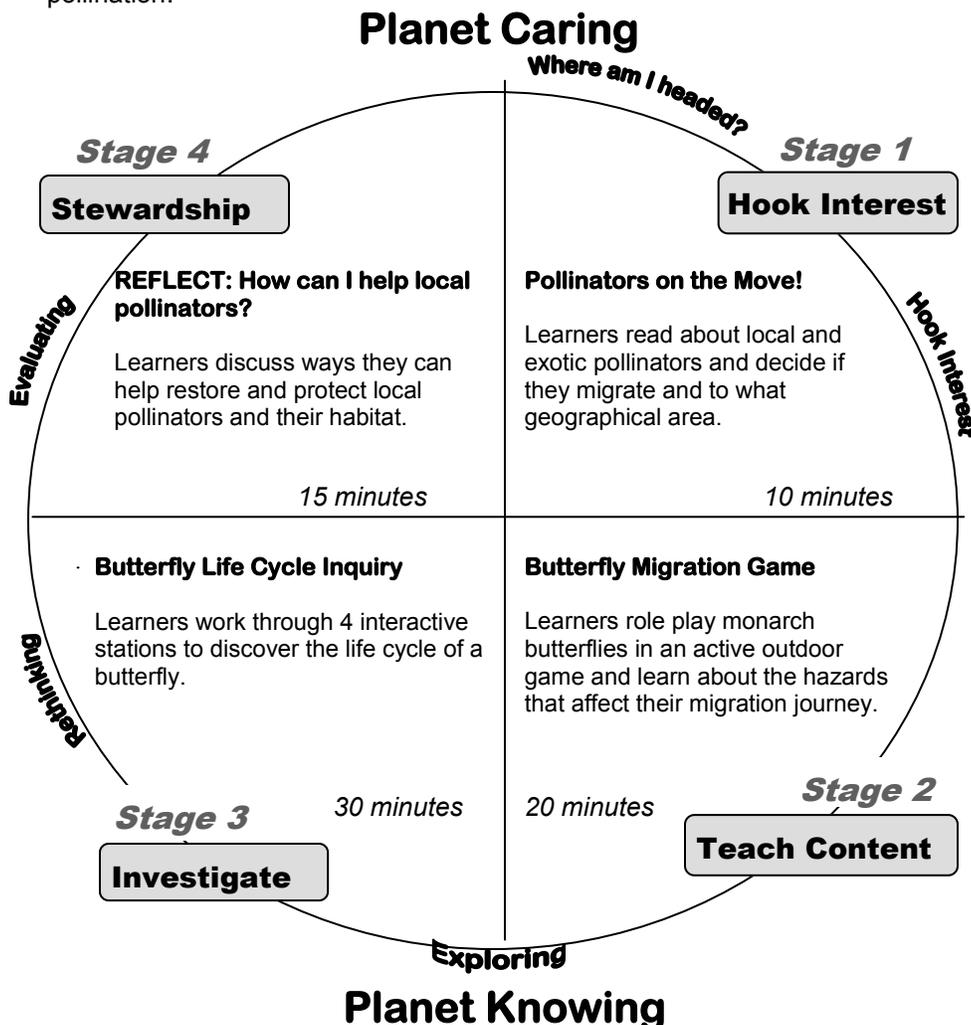
- What is migration?*
- Do any pollinators migrate?*
- What is the life cycle of a butterfly?*
- How do environmental decisions and actions in Central and South America affect North American pollinators?*

At a Glance:

Learners understanding of the Pollination Department and its importance around the planet is strengthened as they investigate migrating butterflies through a migrating pollinator discovery activity, an interactive migration game, a life cycle investigation of live organisms, and reflection on stewardship activities. Club members discover that the health of ecosystems in different US states and even different countries can affect the survival of these beautiful pollinators. As they synthesize their learning they reflect on the importance of stewardship both locally and globally to protect the important eco-service, pollination.

Concepts:

- Plants and animals have adapted to work together to assure that plants are pollinated.
- There are many pollinators that migrate.
- Pollinators are threatened by habitat loss and lack of host plants.
- The stages of a butterfly life cycle include egg, larvae, pupae and adult butterfly.



Objectives

Learners ...

- name 5 pollinators that migrate and 5 that do not.
- understand the hazards that monarchs encounter during their migration.
- conduct a caterpillar investigation.
- predict behaviors of caterpillars.
- label a diagram with parts of a butterfly and a caterpillar.
- observe chrysalides.
- reflect on ways they can help local pollinators on an individual and group level.
- plan a stewardship project to help restore and protect global pollinators.

PROCEDURES IN BRIEF: Pollination Lesson 4—Traveling Pollinators

Stage 1. Pollinators on the Move!

Procedure:

1. Ask students to name some of the pollinators they have learned about in the Pollination Department. Ask if they know what migration means (*seasonal or periodic movement of animals in response to changes in climate or food availability, or to ensure reproduction. Migration most commonly involves movement from one area to another and then back again*). *Can you think of some animals that migrate? Are any of these pollinators?*
2. Use the monarch butterfly as an example of migratory pollinators. Provide some background information on their migration pattern and threats to their success.
3. Have learners pair up into partners. Distribute the pollinator cards to each pair of learners.
4. Give learners time to read the description of their pollinator and decide if it migrates and where it migrates to/from.
5. Tell learners with migrating pollinator cards to stand to your right and those whose pollinators do not migrate to stand to your left. Instruct learner groups to go to their designated area.
6. Allow each group of partners to briefly describe their pollinator and say whether it migrates or not and to what geographical region.

Supplies

- pollinator cards

Stage 2. Monarch Journey

This is an in depth activity-Please see full write-up.

Procedure:

1. Set up the playing area. Put placemats (1 for every 3 learners), representing monarch habitat, in two patches at each end of the playing field.
2. Designate one end of the field as the winter habitat and the other end as the summer.
3. Have the learners put 1 foot on a placemat in the summer habitat. Remember that 3 students can have a foot on each placemat.
4. Learner monarchs are now in their summer habitat, nectaring on flowers and laying eggs on milkweed.
5. Explain that fall has arrived and the monarchs know it is time to migrate south. Tell them if they cannot put a foot on a placemat in the wintering site, that means they cannot find habitat to spend their winter and will “die” (move to the sidelines).
6. Start the “migration”. Have learners “migrate” between the summer and winter sites.
7. After the first “migration”, explain the limiting factors or hazards occurring in the summer habitats while they are in Mexico. Remove one placemat from the summer habitat. Learners now ‘migrate’ back to their summer habitat. The learners that don’t find a placemat should move to the sidelines of the playing field.
8. Before the next migration, remove three or four placemats from the winter habitat. This represents a catastrophic loss of habitat.
9. Repeat the process for several migrations. For one of the rounds, introduce other hazards, written on cards and pass them out to random ‘monarchs’ as they are migrating. These learner monarchs did not survive and must move to the sidelines.
10. After a few rounds, gather the group and use discuss results.

Supplies

- placemats or paper plates
- cards/pieces of paper with various migration hazards

Stage 3. Garden Earth’s Beautiful Butterflies: Butterfly Life Cycle Inquiry

Procedure: See manual or website for full write-up

1. Introduce the activity and major concepts by reading the imagery exercise about metamorphosis
2. Review the following vocabulary with learners.
 - **caterpillar:** the larval stage of a butterfly or moth
 - **chrysalis:** the hard shell covering the pupa; shaped like an upside down teardrop
 - **larva:** the second stage of metamorphosis, during which an insect is wormlike and has no wings
 - **pupa:** the third stage of metamorphosis; encased by a chrysalis
 - **metamorphosis:** a series of developmental stages often marked by body changes.
3. In small groups, learners will rotate between the butterfly life cycle stations. At each station learners look closely at the insects and try to answer the questions. Explain that the questions are meant to be guidelines and not to limit observations! Distribute Discovery Worksheets to learners or provide observation instructions at each station.

Supplies

- 3 cages
- caterpillars
- chrysalides
- butterflies
- rulers
- hand lenses
- butterfly ID guides
- blocks or books for climbing
- protractors
- materials for life cycle wheel
- learner sheets

Stage 4. How can I help local pollinators? REFLECT

Procedure:

1. Briefly reflect on the topics discussed in the Pollination module. Ask learners what their favorite activity was.
2. Ask students if they remember the threats to the Pollination Department. *What can we do to help Earth’s pollinators? What can we do on our own school site? in our backyards?*
3. Help learners come up with their own ideas on how to help pollinators on the school site and at home. Discuss a stewardship plan for your GEN club. The Permaculture section of the GEN manual has ideas for an ‘Instant Garden’ or ‘Keyhole Garden’ that are great starting places for a pollinator garden. Your club may also want to develop an educational campaign on how to protect pollinators to display or present to other students and/or parents.

NOTE: Stewardship activities are not limited to those mentioned in the manual. Allow learners to be creative and take ownership of their pollination stewardship project.

Background information, standards, worksheets, and complete activity write-ups are available in the GEN manuals and also at www.gen.uga.edu