

Lesson 10: Coming Back Home, a Success Story!



Unit: Plants, Pollinators & People - Ecosystems

Unit Driving Question: Should we include cultivars in our native pollinator garden?

Unit Anchor Phenomenon/Storyline: Local fire fighters let the milkweed plants grow and the monarchs soon came! (See full story in Lesson One.)

Overview

Students have been learning about how pollinators have preferences AND how flowers attract specific pollinators by providing characteristics that pollinators look for when using their ‘super powers’ of sight or because a flower’s shape makes it easier for the pollinators to come into contact with that flower to find and drink the nectar. They have learned how to put on community scientist hats to collect data and think like scientists to make sense of all that data. In this final lesson, students will determine how they might be the solution to the problem of decreasing habitats for our pollinators. In their small groups, students will do this by coming up with a new research question for a new research project. They should review some of the ideas they came up with for new research questions from the data analyses they completed in Lesson 9. They might also look at some of the wonderings they have had to see if a new research question might materialize from one of those thoughts or questions. Their final product will be a poster that presents their research question and some evidence of how they will conduct the investigations. For example they might plan and draw a new research garden with the plants they will need to conduct their research. Or they might design and draw an ecosystem that includes some of the interspecies relationships they want to encourage as a result of their work. These drawings might even trigger new research questions which they could highlight on their posters.

Grade(s): Five-Eight	Time Recommendations: 2-3 class periods
Central Focus: Students will consider all of the lessons in this unit in order to determine a solution to a problem in Illinois – how to attract and keep monarchs and other butterflies (or other pollinators) here. They will then explain what they can do to help.	Student Objectives: <ol style="list-style-type: none"> 1. Make a claim about how a solution to help a specific insect (butterfly) meets the criteria to solve the problem by citing relevant evidence backed by research. 2. Describe the relationships between flowering plants and their pollinators by creating a poster that models this information. 3. Determine how we humans might help plants and pollinators by coming up with a new research question and plan of action.
Essential Question: Does including specific plants in a garden attract specific pollinators? How do those plants’ characteristics ensure the pollinators will come? Will this information inform scientists as to what native plants (or their nativars) should be planted to attract pollinators?	

NGSS Alignment: See Unit Overview for list of NGSS standards being addressed.

Vocabulary: Using all of the vocabulary for this unit, have students review the terms using their index cards or spirals. New vocabulary: host (host plant), nectar plant

Materials:

- KWL and Monarch Poster from Lesson 1
- Poster paper or large sheets of paper
- Pencils, rulers, markers
- Student science notebooks
- One more index card
- Copies of Butterfly Research Project (1 per student or group)
- Access to books on butterflies and/or the internet
- Links to internet resources found in Resources for teacher and students

Advance Preparation and Teaching Tips

Teaching Tips

- Allow students to work in groups for this project. Determine the groups ahead of time.
- Make paper strips of individual butterflies from the list of butterflies and put them in a container to draw out randomly and assign to the groups during the lesson.
- Ask your librarian or technology support staff to bookmark the internet sources ahead of time on the computers your students will be using.
- At the beginning of this lesson, tell students that the research they do on butterflies, their host plants, and their nectar plants may help them think of a new research question that will help plants and pollinators.

Pre-teaching/Background Knowledge/Misconceptions

Review all of the information shared from the other lessons and see if there is a misconception that still needs to be addressed. The KWL that was done in lesson one can be read to see if there were any “What I know” statements that need to be revisited to see if students’ misconceptions have been changed.

Activities

Engage (Inquiry/Anticipatory Hook/Opening/Activate Prior Knowledge/Create Interest/Orient to Content)

1. Have the KWL that was used at the beginning of the unit out and ready to look at and add to for this lesson.
2. Begin to fill in the “What have I learned” section.
3. Allow students to go through their notes from this unit to come up with some of the items they have learned.
4. Then take a few minutes to see if there are additional questions that they still have, or if they still have some wonderings.

Explore (Conceptualizing Concepts/Student Activities/Instructional Strategies and Learning Tasks/Development of the Concept)

5. Tell students that today they are going to do a little research on butterflies and their preferred plants. Introduce one new word – host. Explain that just like the monarch needing a milkweed plant for its babies (caterpillars) to hatch and grow, other species of butterflies have specific plants **called HOST plants** to survive.
 - a. Ask them what they think a host means when they give a party at their house to put some real-life context to the term.
6. Show the monarch larva poster one more time and mention that adult monarchs don't have to rely on milkweed at the only plant to find and drink nectar from. Tell them that monarchs also rely on asters and daisies, to name a couple. The plants that adult butterflies get their food from are called the **nectar plants**.
7. Remind students that scientists do a lot of research on a topic to help them determine a good research question and to provide important background information to make claims. They then collect evidence to support their claims.
8. Now show them a list of different butterflies that they can research to find out their required host plants (where they lay their eggs) and their preferred nectar plants (where they get their food as an adult). Determine small groups of 3 or 4 students and place the names of the butterflies in a 'hat' to pull out randomly - a different butterfly for each group to research.

Explain (Checking for Understanding/What the students are doing to construct meaning and what the teacher is doing to facilitate the process)

Students should research to find the following information for their butterfly:

9. Genus species name (scientific name), common name (you gave it to them), host plant(s), nectar plants, if they migrate and where to, if they are on the endangered list, a photograph (picture) of their butterfly and its larva, and at least one other important fact or piece of information they want others to learn about their butterfly.
10. For students who have planted Nativars Research Gardens, be sure they have a list of the plants in your garden and tell them they should determine if any of those plants would be host plants or nectar plants for their insect.
11. Tell students they will form a small group of community scientists that need to know what people can do to ensure that these insects will not become endangered or extinct in the near future.
12. They should write this statement at the bottom of their research posters (with their suggested solution that states, "What We Can Do To Make Sure Our Butterfly Keeps Coming Home." This satisfies the first learner objective for this lesson that students, "Make a claim about how a solution to help a specific insect (butterfly) meets the criteria to solve the problem by citing relevant evidence backed by research." Their claims should be written in this format: CLAIM..., because...EVIDENCE.
13. Give students the handout with the list of research information they need to find and then allow time for them to work together to gather the information.

Extend (Applying New Knowledge/Guided Practice/Independent Practice)

14. Students will gather all of their research together.
15. From their research, their wonderings, and their learning throughout this unit, they will determine a new research question (a new claim). Then they will decide if they will display evidence in the form of a newly designed research garden using the plants that are needed for the pollinators they want to attract, or if they will display evidence in the form of a drawing of an ecosystem where a specific habitat is highlighted with the interspecies relationships that would be encouraged to come and live there.
16. Students will now arrange all of their drawings and research question on a poster.
17. Provide class time for students to complete their posters and practice how they will present their research to the rest of the class.

Evaluate (Closing/Exit Slip/Wrap Up/Tie Up the Lesson/Provide Cognitive Closure)

18. Through a class (or school) symposium or gallery walk, student groups present their findings to others.

Assessments/Evidence of Student Learning

Informal Assessments: Provide individualized instruction as needed to help scaffold learning about how to research their insect and how to construct their findings into a poster presentation.

Formal Assessments: The poster and its components explained by the group of community scientists.

Student and Teacher Resources

An example of a list of butterflies, their host plants, and their nectar plants as found at KidsGardening.org Access your copy of the activity, "[Plant a Butterfly Garden](#)."

Student Sites for Research on butterflies and plants to use in their native gardens:

To answer question 1: For list of butterflies in Illinois and their scientific names: "[Wild About Illinois Moths and Butterflies!](#)"

To answer questions 2, and 3, do google searches for your butterfly.

To help answer the second part of question 3:

- For list of Illinois native species of plants that need little or no watering and are resistant to drought, insect pests and most diseases, go to: DNR: [In Your Garden](#)
- For help answering most other questions go BugGuide.org. Do a google search by typing in the exact common name of your insect, hit the space bar once, then type in bugguide Then click Search to get to information about your insect at BugGuide

Teachers see separate handout with URL suggestions for common butterflies in Illinois.