Lesson 4.1
Investigating Monarchs
Lesson Overview

The final chapter of the unit begins with an exploration of the monarch life cycle and migration patterns. Students revisit the context of the Garden in Mariposa Grove and are introduced to the Chapter 4 Question: *How do we make the Garden a place where monarch caterpillars can live again?*. In the first half of the *Investigating Monarchs* book, the teacher reads about how monarch caterpillars transform into butterflies that then migrate to the forests of Mexico. The class collaborates to complete the Monarch Habitats chart, highlighting the different habitats that monarch caterpillars and butterflies need at different stages of their lives. Students reenact these different stages in the Monarch Migration movement routine. The teacher guides students to complete the final pages of their mini-books, focusing on illustrating the habitats of monarch caterpillars and butterflies. The purpose of this lesson is to build students’ understanding of the monarch life cycle and of the monarchs’ migration among varied habitats throughout their lives.

**Design Problem:** Create a plan for a garden where monarch butterflies can live.

**Investigative Phenomenon:** Monarch caterpillars eat milkweed and live in different habitats when they become butterflies.

**Students learn:**

- Monarch caterpillars grow into monarch butterflies.
- Monarchs have different habitats at different parts of their lives.
The teacher introduces the Chapter 4 Question and reads the first half of *Investigating Monarchs* about monarchs’ transformation and migration.

**Instructional Guide**

1. Revisit Mariposa Grove. Project the image of the children in Mariposa Grove.

![Children from Mariposa Grove](image)

This is a picture of some of the children in Mariposa Grove. What are some of the ways we have been helping these children as we have been working as scientists?
If students’ responses do not include the following ideas, project the image of the Field and the Garden and use the appropriate prompts below.

2. Introduce the Chapter 4 Question.

We have helped the children of Mariposa Grove learn a lot. We told them why there are no monarch caterpillars in the Garden anymore. We helped them figure out what milkweed plants need to live and grow.

But the children still need our help. They want to know how they can make the Garden into a place where the caterpillars can live again.

Point to the Chapter 4 Question on the wall and read it aloud.

How do we make the Garden a place where monarch caterpillars can live again?

We are working as scientists to learn more about monarch caterpillars. Other scientists in the world are investigating monarch caterpillars, too. We are going to read a new book about how some other scientists study monarch caterpillars.

Point to and read the title aloud.

Investigating Monarchs.

Invite students to describe what they observe on the cover.

4. Revisit the word habitat.

This book will help us learn more about monarch caterpillars and their habitats.

Point to the habitat vocabulary card on the classroom wall and review the vocabulary routine.

This is the word habitat. Remember that a habitat is a place where a plant or animal lives and grows.

We are going to practice saying the word again. Say the word after me: habitat.

Now say the word together: habitat.

Now whisper the word habitat to your partner.

A habitat is a place where a plant or animal lives and grows.

5. Set purpose for reading.

Our purpose for reading today is to see if we can figure out new information about monarch caterpillars. Maybe this new information will help us figure out how to make the Garden a place where the caterpillars can live and grow.

6. Begin reading, pausing at the end of page 5 for partner talk. Invite students to share their ideas with a partner about what a monarch caterpillar will change into. Ask several volunteers to share their ideas with the whole class.

7. Continue reading, stopping at the end of page 8 to discuss. Remind students that the purpose for reading today was to figure out new information about monarchs.

Did we learn anything new about monarch caterpillars from reading today? [Yes. Caterpillars change into butterflies. Butterflies drink nectar. Butterflies fly to a forest in Mexico when it gets cold.]
Teacher Support

Background

Science Note: Monarch Migration
The text of *Investigating Monarchs* explains that monarchs must fly south to Mexico in winter in order to survive the cold. This explanation is simplified in order to make it more accessible to kindergarten students. In reality, this migration cycle occurs over the course of a few monarch generations. Monarchs born in Mexico fly north to the United States at the end of the summer, mate, and die. Subsequent generations continue the journey northward, each generation living about a month and producing a new generation. Generations born at the end of the summer and early fall, however, live much longer, making the entire migration to return south and overwintering in the alpine forests of central Mexico.

Instructional Suggestion

Supporting Discussions: Using the Explanation Language Frame
In order to support students’ use of language from the unit, you might choose to use the language frames (from Lesson 1.6) during the discussion about why there were no more caterpillars once the garden was planted: ____ can live there because the ____ they need are there, and ____ cannot live there because the ____ they need are not there. Fill in the frame to make the sentence Monarchs cannot live there because the milkweed they need is not there.

Background

About the Book: *Investigating Monarchs*
*Investigating Monarchs* emphasizes the needs of monarch caterpillars and butterflies and shows what happens when these animals are not able to meet their needs. The book first introduces the life cycle of monarchs, explaining that monarch caterpillars must eat milkweed to survive and change into butterflies. Their summer habitat must have milkweed. The butterflies then migrate a long distance, from the United States to a forest in the mountains of Mexico, where they take shelter in the trees. Their winter habitat must have trees. Scientists discovered that the monarch population in Mexico was greatly reduced because people were cutting down the trees. The forest was then protected, but the monarch population did not recover as expected. Scientists in the United States found evidence that this was because fields with milkweed are being replaced by farms and buildings. Students are encouraged to think about what people in the United States can do to help the monarchs get what they need to survive. *Investigating Monarchs* is used as a Shared Reading, first to discover that monarch caterpillars turn into butterflies and then to consider how humans are changing monarch habitats.
Lesson 4.1
Activity 1

Needs of Plants and Animals
Lesson Guides

Background

Crosscutting Concept: Systems and System Models Across Chapter 4
In Chapter 4, students investigate the question How can humans make sure that other living things can live and grow? As students consider the different plants that can all be part of the Garden, they are considering the system of a habitat for animals (monarchs and humans) that need plants to survive. Students are expanding their early Chapter 1 conception of the interacting parts that make up a habitat—the animal and the food for that animal—to specify a habitat that can simultaneously support the needs of monarchs and humans. By focusing in on how different parts of the system fulfill the needs of different living things, students begin to construct an early understanding of ecosystems.

Background

Crosscutting Concept: What Is Meant by Patterns?
Patterns is a crosscutting concept called out by the Next Generation Science Standards. It is one of seven powerful ideas that is widely useful across scientific topics and subdisciplines. In science, a pattern is a discernible regularity in the natural world—similarities in the characteristics of things or in the way that events occur. With students, we use a slightly different definition intended to capture similar ideas: a pattern is something we observe to be similar over and over again. Attending to patterns is useful in science because noticing a pattern often leads to questions about why the pattern occurs, which leads to a new understanding of how the world works. The crosscutting concept of Patterns is applicable throughout science and engineering.

Background

Crosscutting Concept: Patterns Across Chapter 4
Patterns can be observed everywhere in the natural world and, thus, could be pointed out in almost any lesson. However, we are calling it out particularly in Chapter 4 because several big patterns can be easily pointed out and discussed. In Lesson 4.1, students learn about the monarch life cycle and and monarch migration patterns, both of which are repeating, cyclical patterns. Throughout the lesson, there are opportunities to point out these two patterns to students—first when you read Investigating Monarchs; later when you complete the Monarch Habitats chart and when students participate in the Monarch Migration movement routine. There are additional opportunities in subsequent lessons. You may want to introduce the word cycle, but that’s not necessary. You could simply call it a pattern or a repeating pattern. Ask the class what other repeating patterns they can think of.
Reading: Investigating Monarchs

The teacher introduces the Chapter 4 Question and reads the first half of *Investigating Monarchs* about monarchs’ transformation and migration.

Instructional Guide

1. Revisit Mariposa Grove. Project the image of the children in Mariposa Grove.

Esta es una fotografía de algunos de los niños en Mariposa Grove. ¿Cuáles son algunas de las maneras en que hemos estado ayudando a estos niños mientras hemos estado trabajando como científicos?
If students’ responses do not include the following ideas, project the image of the Field and the Garden and use the appropriate prompts below.

2. Introduce the Chapter 4 Question.

¿Cómo hacemos que el jardín sea un lugar donde las orugas monarcas puedan vivir de nuevo?

Estamos trabajando como científicos y científicas para aprender más acerca de las orugas monarcas. Otros científicos en el mundo también están investigando las orugas monarcas. Vamos a leer un nuevo libro acerca de cómo algunos otros científicos estudian las orugas monarcas.

Point to and read the title aloud.

*Investigando a las monarcas.*

Invite students to describe what they observe on the cover.

4. Revisit the word *habitat.*

Este libro nos ayuda a aprender más acerca de las orugas monarcas y sus hábitats.

Point to the *habitat* vocabulary card on the classroom wall and review the vocabulary routine.

Esta es la palabra *hábitat.* Recuerden que un hábitat es un lugar donde vive y crece una planta o un animal.

Vamos a practicar decir la palabra. Digan la palabra después de mí: *hábitat.*

Ahora digan la palabra juntos: *hábitat.*

Ahora susurren la palabra *hábitat* a su compañero o compañera.

Un hábitat es un lugar donde vive y crece una planta o un animal.

5. Set purpose for reading.

Nuestro propósito para leer hoy fue ver si podemos averiguar información nueva acerca de las orugas monarcas. Tal vez esta nueva información nos ayudará a averiguar cómo convertir al jardín en un lugar donde las orugas puedan vivir y crecer.

6. Begin reading, pausing at the end of page 5 for partner talk. Invite students to share their ideas with a partner about what a monarch caterpillar will change into. Ask several volunteers to share their ideas with the whole class.

7. Continue reading, stopping at the end of page 8 to discuss. Remind students that the purpose for reading today was to figure out new information about monarchs.

¿Aprendimos algo nuevo acerca de las orugas monarcas al leer hoy?

[Sí. Las orugas se transforman en mariposas. Las mariposas beben néctar. Las mariposas vuelan hasta un bosque en México cuando hace frío].
Teacher Support

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