

Exploring Life Cycles with The Very Hungry Caterpillar

Lesson Plan

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Overview & Purpose

Students will practice reading the Very Hungry Caterpillar and complete activities based on the book. Students will understand butterfly life cycles as well as build literacy skills.

Education Standards

SC.K.L.14.1, SC.K.L.14.2, SC.K.L.14.3, SC.K.N.1.2, SC.K.N.1.3, SC.K.N.1.4, SC.K.N.1.5, SC.1.E.5.3, SC.1.E.6.1, SC.1.L.14.1, SC.1.L.14.2, SC.1.L.16.1, SC.1.L.17.1, SC.1.N.1.1, SC.1.N.1.3, SC.1.N.1.4, SC.2.E.6, SC.2.E.7, SC.2.L.17, SC.2.N, SC.2.L.16.1

LAFS.K.RL.1.1, LAFS.K.RL.1.2, LAFS.K.RL.1.3, LAFS.K.RL.3.7, LAFS.K.SL.1.2, LAFS.K.SL.1.3, LAFS.K.SL.2.5, LAFS.K.W.3.8, LAFS.1.RL.1.1, LAFS.1.RI.1.2, LAFS.1.RI.1.3, LAFS.1.SL.1.2, LAFS.1.SL.1.3, LAFS.1.SL.2.4, LAFS.1.SL.2.5, LAFS.1.W.1.2, LAFS.1.W.3.8



Warm Up Pre-Visit Activity *(Adapted from Growing Up Wild, USFWS)*

Preparation: Gather pictures of various baby animals and their parents or adult forms. (dogs, cats, birds, manatees, etc.) You can also collect photos of people at different stages in their development. You might ask other teachers or parents for photos of themselves, or invite students to bring in their own baby pictures.

Spread the pictures out on a table and have the students guess which ones go together. When all the matches are made or revealed, ask students what they notice about the pictures. In what ways are the babies different from adults? How are they similar? How do people and animals change as they grow?

Then, show them a picture of a caterpillar and a butterfly. Explain that a caterpillar is a baby butterfly.

Ask students what is different about the caterpillar and butterfly compared to the other pictures of babies and adults? (human and animal babies resemble the parents or adults, but the baby caterpillar does not look anything like the butterfly!)

Tell students that they will be learning about how the butterfly changes throughout its life.

Draw a KWL chart on the board, or hand out writing paper, depending on students' skill level. Ask students what they already know about caterpillars and butterflies and the life cycle of a butterfly. Then ask students what they would like to learn.

This activity can be done with the whole class as a brainstorming session with you recording responses on the chart, or students can write their responses on their individual sheets. Students may also work in small groups and share their responses with the class. Use the caterpillar and butterfly pictures to help stimulate conversation. (Accept all answers at this point. Later, students will return to the responses on the chart and determine which of the statements represent facts that they learned or observed during the visit to Selby Gardens.)

Tell students that they will be going on a trip to Selby Gardens where they will learn more about how caterpillars become butterflies, and see lots of beautiful plants!

Activity: Butterfly and Caterpillar Exploration with *The Very Hungry Caterpillar*, by Eric Carle

Show students the cover of *The Very Hungry Caterpillar* by Eric Carle. Tell students that it is the story of a very hungry caterpillar that has something very special happen to him.

Read the story aloud, or watch these read-aloud YouTube videos:

Author and illustrator, Eric Carle: <https://www.youtube.com/watch?v=vkYmvxPOAJI>

Tracy Calla, Senior Manager of School and Family Programs at Selby Gardens
<https://www.youtube.com/watch?v=daIVSlekipo&authuser=3>

Many students are familiar with the book, and may read or recite along. If the book is familiar to them, ask them if they remember what happened in the story. Review that it begins with an egg on a leaf, which pops open and a tiny hungry caterpillar comes out. Then the caterpillar eats and eats and eats and gets big and fat! He built a little house for himself and stayed in there for 2 weeks. And then he popped out and was a beautiful butterfly!

After you finish the book, talk about how the book is not just a story about one little caterpillar who has an adventure. It's about what happens in the life of all butterflies!

Butterflies have a lifecycle that has four different stages. These stages are called metamorphosis, which means change.

1. The butterfly begins as an egg. Just like in the story, they are usually found on a leaf. The egg is usually laid on the plant that the caterpillars prefer to eat – this helps make sure the young are able to start eating right after they hatch, because they will be really hungry when they hatch! Some butterfly eggs hatch in a few days; others in a few months. The average is about a week or so.

2. When the egg hatches, out comes a caterpillar. Caterpillars usually hatch by eating through their own egg shell! The caterpillar's only job is to eat and grow. As it eats, and eats, and eats the caterpillar grows. It becomes too big for its own skin and has to shed or molt the old skin. Caterpillars can grow very quickly!

3. When a caterpillar reaches full size, it will molt to reveal a soft new body called a pre-pupa. The caterpillar spins silk and attaches itself to a twig or stick, usually upside down. Its new soft body will harden to form a pupa or chrysalis. Inside the chrysalis, the pupa gradually changes. This transformation can take a few days or weeks, depending on the species. Others might take several months, or almost a year!

4. The chrysalis will crack open when the change (the metamorphosis) is complete, and a beautiful adult butterfly emerges! Butterfly wings are soft and crumpled when they first emerge from their chrysalis. They have to wait for them to dry before they can fly. The butterfly sits for a few hours until its wings have dried off, then it is ready to fly away.

Vocabulary: cocoon vs chrysalis- a *cocoon* is the pupa of a moth. The correct word for a butterfly pupa is *chrysalis*. (And in the book, it says the caterpillar nibbles a little hole to get out...but in real life adult butterflies don't have mouths! They only have a *proboscis* (*pro-boss-kiss*), which is kind of like having a curly straw in place of a nose and mouth. Now students know 2 things a lot of adults don't know!)

To connect the book across the curriculum, talk about and ask questions about the story itself. For example:

Sequencing: What happened at the beginning of *The Very Hungry Caterpillar*? What happened in the middle or end? What is happening in this picture?

Days of the Week: What days of the week did the caterpillar eat the different foods, such as plums, or watermelon?

Math: How many things did he eat on Friday? How many more is that than what he ate on Sunday? Which days did he eat an even/ odd number of things?

Real vs imaginary: Do they think caterpillars really eat pieces of cake, cheese, etc.?

Talk about the pictures: What color is this? What is this object?

Health and Nutrition: Can you remember all of the food that was eaten? Why was the caterpillar so hungry? How did he feel after eating so much on Saturday? Which foods are healthy?

Followup Activity #1: Review What You Learned

Preparation: add 2 more photos to the caterpillar and butterfly photos used in the pre-visit activity: egg(s) and a chrysalis.

Ask the whole group: What did we want to know about caterpillars and butterflies?

Go through the KWL chart, or have students review their writing from the pre-visit activity and check off things from the “want to know” list that the class achieved in learning during their visit to Selby Gardens. Add items to the "L" column or have students write on their sheets as they share additional/ new things they learned.

Review the life stages of a butterfly as you do this, and use the egg/ caterpillar/chrysalis/ butterfly photos to stimulate conversation. This activity can be done as a brainstorming session with you recording responses on the chart, or students can write their responses on their individual sheets. Students may also work in small groups as a think-pair-share.

Followup Activity #2: Create Your Own Butterfly Garden!

Teacher Background Information

Butterflies are important to our environment for many reasons. They are pollinators, food for other animals and are indicators of healthy ecosystems. They are also beautiful and fun to watch as they flutter across the landscape.

Florida’s incredible butterfly diversity makes it a fantastic location for butterfly gardening! 180 butterfly species live in or pass through the Sunshine State, and 40 of those are unique to Florida. Butterfly gardens are also attractive to hummingbirds and other pollinators, as well as beneficial insects. A butterfly garden does not require a lot of space; even a few well-chosen plants in pots will do. If you have a large plantable area, so much the better!

Open sunny areas are an important feature of the garden. Most butterfly-attracting plants grow better and produce more flowers in the sun, and butterflies tend to be more active in the sun. Some protection from the wind is also necessary. If possible, plant the garden in a spot that will be seen from indoors and outdoors so it can be enjoyed anytime.

Regardless of size, the same basic concepts apply to a well-planned butterfly garden. The most important thing to understand is that different butterfly species have different requirements, and these requirements change throughout their life cycles. To get started, do some research to determine which species of butterflies visit your area and tailor the garden to their preferences.

The complete butterfly garden should appeal to many different butterfly species and also cater to both the adults and their larvae (caterpillars). Most adult butterflies feed on flower nectar and will be attracted to a wide variety of different flowers, but relatively shallow, simple flowers are best for nectar gathering. Butterflies are especially attracted to sweet-scented or pungent flowers that are orange, yellow, pink, purple and red. White flowers that are fragrant at night, may attract moths. A wide mix of flower colors, shapes, sizes and bloom seasons provides appealing and accessible food to a larger number of butterfly species and makes your garden more eye-catching.

While winged adult butterflies are attracted to a wide variety of colorful flowering plants as a source of food, their larvae (caterpillars), rely on very specific plants for food. These are called host plants. Host plants are sometimes not as showy as nectar plants, nor are they even necessary to attract adult butterflies, but adults tend to stay fairly close to the areas where they can lay their eggs, ie., where their larval food plants can be found. A garden with host plants offers a reason for butterflies to stay in or near your garden long-term.

Remember also that larval host plants are meant to be eaten. You will see damaged leaves or even some plants that are completely defoliated. This is a good thing! It means that your butterfly garden is productive! Since highly preferred host plants may be unattractive or eaten until they have few leaves, plan an out-of-the-way place for these hosts. Within no time, though, most hosts will recover. Don't forget that butterfly larvae are very picky eaters, and will not cause damage to other landscape plants or become garden pests.

Besides sources of food, butterflies need water and shelter as well. Butterflies can't drink directly from open water so if you do not have a wetland or natural moist area in your garden, it is a good idea to create "puddles" or depressions of moist sand or mud. One way is to partially bury a shallow container such as a saucer, fill the container with sand and wet thoroughly. Placing a few rocks or sticks in this "puddle" allows the butterflies to perch and drink. Rocks also provide a site where butterflies can bask to store body heat from the sun.

Planting tall and mid-sized trees and shrubs with different growth habits creates attractive horizontal and vertical diversity in the garden, provides shelter at night and in bad weather, and keeps both low-feeding and high-feeding butterflies happy.

Butterflies are insects and are very sensitive to pesticides. Caterpillars may die from eating plants that have been treated with pesticides in the past. Avoid using pesticides in your garden, and be careful when buying plants as many nurseries and garden centers use pesticides. If you discover pest problems, there are many non-toxic means of controlling pests, such as removal of affected plant parts, or blasting with water.

Butterfly gardening may seem challenging, as it requires paying close attention to butterfly preferences rather than human ones. Fortunately, many of a butterfly's favorite garden features are compatible with a human's!

Below is a partial list of some native Florida butterflies, as well as Florida native host plants. You can find more information on these butterfly species as well as the plants they prefer in a variety of books and pamphlets available online and in your favorite bookstores.

BUTTERFLIES OF FLORIDA AND NATIVE HOSTS

Common Name	Scientific Name	Native Host Plant(s)
Luna Moth	<i>Actias luna</i>	Sweetgum, persimmon
Gulf Fritillary	<i>Agraulis vanillae</i>	Passion Flowers, pipevines
White Peacock	<i>Anartia jatrophae</i>	Water hyssop, fogfruit
Great Southern White	<i>Ascia monuste</i>	Saltwort, limber caper
Pipevine Swallowtail	<i>Battus philenor</i>	Pipevines
Gold-rim Swallowtail	<i>Battus polydamas</i>	Pipevines, lantana
Queen	<i>Danaus gilippus</i>	Milkweeds
Monarch	<i>Danaus plexippus</i>	Milkweeds
Julia	<i>Dryas iulia</i>	Passion Flowers
Zebra Longwing	<i>Heliconius charithonia</i>	Passion Flowers
Common Buckeye	<i>Junonia coenia</i>	Toadflax, twinflower
Giant Swallowtail	<i>Papilio cresphontes</i>	Wild lime
Tiger Swallowtail	<i>Papilio glaucus</i>	Sweetbay, wild cherry

Eastern Black Swallowtail	<i>Papilio polyxenes</i>	Parsely, dill, fennel
Spicebush Swallowtail	<i>Papilio troilus</i>	Red bay, swamp bay
Orange Barred Sulphur	<i>Phoebis philea</i>	Sennas/Cassias
Cloudless Sulphur	<i>Phoebis sennae</i>	Sennas/cassias,
Checkered White	<i>Pieris protodice</i>	Peppergrass
Palamedes Swallowtail	<i>Pterourus palamedes</i>	Red bay, swamp bay
Malachite	<i>Siproeta stelenes</i>	Green shrimp plant
Painted Lady	<i>Vanessa cardui</i>	Thistles
Red Admiral	<i>Vanessa atalanta</i>	False nettle

TEACHER BACKGROUND INFORMATION: FUN BUTTERFLY FACTS!

- Butterflies have been around for over 56 million years.
- Butterflies can be found all over the world, except in Antarctica. There are about 20,000 species of butterflies. You would have to find at least 10 different kinds every day for 5 years to come close to seeing them all! The moths are even more numerous: about 140,000 species of them were counted all over the world
- Butterflies are insects, which means that they have six legs, a set of antennae, and three parts to their body (the head, thorax, and abdomen).
- Butterflies might look like they have 2 wings, but they have 4! A butterfly flaps all its wings at the same time at about 5 beats per second. The fastest butterfly speed is 12 miles per hour. Some moths can fly 25 miles per hour!
- Butterflies cannot fly if their body temperature is less than 86 degrees.
- Butterflies can't hear. They can see red, yellow and green.
- Unlike their caterpillar stage, adult butterflies don't have mouths! Instead, they have a coiled tube (kind of like a curly straw) called a proboscis. To get food, they can only sip liquid. Most butterflies sip flower nectar. Other sip tree sap, the juice from decaying fruit, or salts and minerals from damp soil and puddles. When they get thirsty, they will sip water from puddles, or damp patches on hard surfaces or leaves.
- Butterflies "taste" with their front feet! They use their feet to find nectar and to find the right kind of plant to lay their eggs on.
- Adult butterflies can live from a week to over a year, depending on the species.
- Monarch butterflies are known for their long migrations, which is when they fly to a different part of the country, or the world, when the weather changes. In North America, thousands of monarch butterflies migrate from the Great Lakes to California and the Gulf of Mexico, a distance of about 2,000 miles, and return to the north again in the spring. They travel about 80

miles per day! Monarchs in Florida don't migrate, and usually stick around the same areas all year.

- One of the best ways that butterflies protect themselves is by using their wings. Besides using them to fly away, butterflies have adapted to have wings that camouflage with their surroundings, have patterns on them that make them resemble larger animals, (like owls, for example) or they look like other kinds of butterflies that taste bad!
- Some caterpillars protect themselves with stinging hairs and some have spots that make them look like snakes!

Assessment

Steps to check for student understanding

Provide a sheet of paper for each student. Have them fold it in half, then half again, so it looks like a small book. When opened, students have the opportunity on page 1 to share their thoughts about their Selby Gardens experience. Have them write or draw their response to the prompt "My favorite part of visiting Selby Gardens..."

On page 2, students can write or draw about something they saw, heard, or experienced at Selby Gardens that they want to know more about.

Pass out colored pencils or crayons and ask students to open up the journal all the way. On the inside, the four sections of the page correspond to the 4 stages of the butterfly life cycle.

Have students draw and describe the 4 stages of the butterfly life cycle, in the proper order, with one stage per quadrant. For example: eggs on a leaf in the top left quadrant, a caterpillar in the top right quadrant, a chrysalis in the bottom right quadrant, and finally, a butterfly in the bottom left quadrant.

When folded completely closed, students may decorate the outside covers any way they like.

