Life Cycle Miracle

Painted Lady Butterfly Hatching Project

Suggested grades: 2nd, 3rd and 4th

Butterflies are colorful, diverse insects that capture our imagination and inspire creativity. Their images have adorned clothing, jewelry, paintings and more. Children are fascinated by their beauty and flight patterns.

The Painted Lady (Vanessa cardui) is one of the most widespread of all butterflies. It is found on every continent except Antarctica.

Hatching Painted Lady butterflies in the classroom provides a rich, hand-on learning experience. Students will learn about a butterfly’s life cycle, body structure, and its connection to the environment. Throughout the hatching project, students will gain important skills regarding observation and comparison. They will also have fun imagining where their Painted Ladies will travel after they are released.

Objectives

✓ Students will be able to describe the life cycle of a butterfly.
✓ Students will be able to compare the similarities and differences between a butterfly and a moth.
✓ Students will be able to describe the role of a butterfly in its environment.
Summary of Life Cycle Details

1. The eggs take 3 to 5 days to hatch into a caterpillar. The Painted Lady caterpillar is black with spiked skin.

2. The caterpillar takes 7 to 11 days to turn into a pupa or chrysalis.

3. It will take 7 to 11 days for the chrysalis to turn into a butterfly.

4. The Painted Lady butterfly will have a wing span of 2 inches.

5. The butterfly can be released outside when daytime temperatures are 70 F or higher. It will live for about two weeks and travel nearly 1,000 miles in its lifetime.

6. Painted Lady butterflies have been found on every continent except Antarctica.

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![Painted Lady Butterfly Life Cycle Diagram](https://example.com/zoomSchool.com)
Life Cycle Facts

1. The female Painted Lady butterfly lays her eggs on a plant leaf. She chooses a plant that the caterpillars, which grow from the eggs, can eat.

2. The eggs hatch into small larva or caterpillars. The caterpillars of the Painted Lady butterflies are black to purple in color, with yellowish-green stripes and long spines.

3. The caterpillar eats and grows a tremendous amount. Its skin becomes too small for its growing body. The skin, or exoskeleton, splits and then sheds several times as it grows.

4. When the caterpillar is finished growing, it will find a safe place to rest, such as the underside of a leaf or branch. A silk thread then comes out of a hole below its mouth. The caterpillar spins enough thread to make a soft pad to which it will attach.

5. The caterpillar uses its prolegs, hangs from its rear and sheds its skin for the last time, revealing the pupa or chrysalis. The pupal stage of the chrysalis resembles a mummy. It is hard for protection.

6. Inside the pupa, the caterpillar begins to change into a butterfly. The butterfly is the adult stage. The changes include:
   - Four large, scaly wings develop
   - The prolegs disappear and three pairs of jointed legs grow.
   - Mouthparts change and a proboscis forms.
   - Large, compound eyes grow allowing the butterfly to see color and in all directions. The caterpillar was only able to see shades of green.
   - Long antennae grow to pick up scent.

7. Toward the end of the pupal stage, the chrysalis becomes more clear and the butterfly can be seen.

8. When the butterfly comes out of the chrysalis, its wings are soft and wrinkled. They will become hard and strong within a few hours.

9. The proboscis is in two long pieces as the butterfly emerges from the chrysalis. It will zip its mouthpart together to form a sipping straw to gather nectar from flowers.

10. The adult butterflies will live approximately 2 weeks. Once they have emerged, they have only one mission – to sip nectar and reproduce.
Label Me: Parts of a Butterfly

**Abdomen** - The abdomen is the segmented tail area of an insect that contains the heart, Malpighian tubules (organs that remove waste), reproductive organs, and most of the digestive system.

**Antenna** - An antenna is a sensory appendage that is attached to the head of adult insects. Antennae are used for the sense of smell and balance. Butterflies have two antennae with clubs at the end.

**Compound Eye** - Insect compound eyes are made up of many hexagonal lenses.

**Fore wing** - The fore wings are the two upper wings.

**Head** - The head is the part of the insect that contains the brain, two compound eyes, the proboscis, and the pharynx (the start of the digestive system). The two antennae are attached to the head.

**Hind wing** - The hind wings are the two lower wings.

**Leg** - All adult butterflies have six legs. The two forelegs of some butterfly species are tiny.

**Proboscis** - Adult butterflies sip nectar and other liquids using a spiral, straw-like proboscis located on their head.

**Thorax** - The thorax is the body section between the head and the abdomen. The legs and wings attach to the thorax.
Answers for Label Me: Parts of a Butterfly

- Fore wing
- Hind wing
- Compound eye
- Head
- Antenna
- Proboscis
- Thorax
- Legs
- Abdomen

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Caring for your Painted Lady Butterfly larvae

1. Place larvae container in classroom, out of direct sunlight, but visible for observation.

2. Begin observing and tracking changes on the observation sheet. The larvae take 7 to 11 days to each make a chrysalis, or pupa.

3. Prepare a butterfly cage and lid. Line the bottom of the cage with paper towels. If using a mesh container, have paperclips nearby for later use. If using a glass or plastic container, have tape nearby for later use.

4. Watch for the larvae to form chrysalises. They will attach to the paper under the container's lid. After all the chrysalises have formed, wait one more day to ensure all have properly dried.

5. Open the container's lid and carefully remove the paper. If using a mesh cage, use paper clips to attach the paper to the side of the cage.

Open the paper clips wide enough that you can insert one end into the paper. Attach the paper (with chrysalises) to the side of the butterfly cage, inserting the other end of the paper clip into the mesh. If a chrysalis detaches, gently place it near the bottom side of the cage. If using a glass or plastic tub, tape the paper to the side.

6. Continue observing the chrysalises. Lightly mist them with water once or twice a day.

7. The chrysalises will darken when the butterfly is close to hatching. It will take 7 to 11 days for the chrysalis to turn into a butterfly.

8. When hatching is near, prepare food and place it at bottom of cage. Food options:

- 20% sugar-water solution method: Mix five tablespoons of brown sugar with 1 cup of water. Soak two paper towels in the solution until fully wet. Place wet paper towels on a plate or in a shallow bowl. Store remainder at room temperature. Cut several orange wedges and place near solution. Replace paper towels and oranges as they dry. You may need to fix additional batches of the sugar-water solution.

- Artificial food method: Purchase on your own. Mix and use according to instructions.

9. As the butterflies hatch, they may excrete a red-colored liquid called meconium.

10. When all butterflies have hatched, remove the paper and the chrysalis remains. Continue to mist the butterflies daily. Replace the paper towels (soaked in the sugar-water solution) or oranges when they dry out.

11. Continue observation. Release the butterflies when the outside daytime temperatures are 70 F or higher.
Track the changes of your Painted Lady Butterfly

<table>
<thead>
<tr>
<th>Date the larvae arrived</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>How many larvae do we have?</td>
<td></td>
</tr>
<tr>
<td>Draw a picture of a larva.</td>
<td></td>
</tr>
<tr>
<td>What date did they start &quot;spitting&quot; silk?</td>
<td></td>
</tr>
<tr>
<td>How many days did they spit silk?</td>
<td></td>
</tr>
<tr>
<td>What date did they begin forming chrysalises?</td>
<td></td>
</tr>
<tr>
<td>How many days before they began hatching?</td>
<td></td>
</tr>
<tr>
<td>How many butterflies do we have?</td>
<td></td>
</tr>
<tr>
<td>Date we released them</td>
<td></td>
</tr>
<tr>
<td>Draw a picture of your butterfly.</td>
<td></td>
</tr>
</tbody>
</table>
Comparisons with moths

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>BUTTERFLIES</th>
<th>MOTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antennae</td>
<td>Club-like with a swollen tip</td>
<td>Feathery</td>
</tr>
<tr>
<td>Color</td>
<td>Usually bright colors</td>
<td>Usually less bright than butterflies</td>
</tr>
<tr>
<td>Resting Stance</td>
<td><img src="Butterfly-Rest.png" alt="Butterfly Resting" /></td>
<td>Wings open and folded over its back while resting, looking like the train of a wedding gown.</td>
</tr>
<tr>
<td>Period of Activity</td>
<td>Usually active during the day</td>
<td>Usually active at night (and attracted to light)</td>
</tr>
<tr>
<td>Pupa</td>
<td><img src="Butterfly-Pupa.png" alt="Butterfly Pupa" /></td>
<td>Protected by a cocoon or pupate underground or on the ground</td>
</tr>
<tr>
<td>How the Forewing and Hindwing are Held Together in Flight</td>
<td>With an enlarged humeral lobe on each hindwing</td>
<td>With a frenulum (bristles or spines on each hindwing)</td>
</tr>
</tbody>
</table>
Did you know?

1. A scientist who studies butterflies is called a lepidopterist.

2. Butterflies range in size from 1/8 inch to almost 12 inches.

3. Butterflies can see red, green, and yellow. Caterpillars can see only green.

4. The top butterfly flight speed is 12 miles per hour. Some moths can fly 25 miles per hour!

5. Butterflies cannot fly if their body temperature is less than 86 degrees.

6. Antarctica is the only continent on which butterflies have not been found.

7. There are about 24,000 species of butterflies. The moths are even more numerous: about 140,000 species.

8. Butterflies are active during the day, while moths are active at night.

9. Some moths never eat anything as adults because they don't have mouths. They must live on the energy they stored as caterpillars.

10. Butterflies and insects have their skeletons on the outside of their bodies, called the exoskeleton. This protects the insects and keeps water inside their bodies so they don't dry out.

11. Many butterflies can taste with their feet to find out whether a leaf can be caterpillars' food or not. When a female butterfly finds a tasty leaf, she will lay her eggs on it.