

## Photo Description



This caterpillar has black, white, and yellow stripes all over its body. It is crawling on a rock next to green leaves. The caterpillar has two black parts sticking out from its head.

## Scientific Phenomena

This image shows the larval stage of metamorphosis - specifically a monarch butterfly caterpillar in its growth phase. The caterpillar is demonstrating several key life science phenomena: it's actively feeding and growing (which will trigger molting), displaying warning coloration (aposematism) to deter predators, and progressing through one of the four distinct life cycle stages of complete metamorphosis. The distinctive black, white, and yellow striping serves as a visual warning to predators that this caterpillar contains toxins absorbed from milkweed plants.

## Core Science Concepts

1. Life Cycles: Animals go through different stages as they grow and change from babies to adults
2. Growth and Development: Living things need food, water, and space to grow bigger and stronger
3. Animal Characteristics: Animals have special body parts and colors that help them survive
4. Habitat Needs: Animals live in places that give them what they need to survive

### Pedagogical Tip:

Use real caterpillars or butterfly gardens in your classroom to let students observe life cycle changes firsthand. First graders learn best through direct observation and hands-on experiences.

### UDL Suggestions:

Provide multiple ways to represent the life cycle concept: use picture books, physical models, drawings, and movement activities where students act out each stage. This supports visual, kinesthetic, and auditory learners.

## Zoom In / Zoom Out

1. Zoom In: Inside the caterpillar's body, special cells called imaginal discs are already forming. These tiny cell groups will later become the butterfly's wings, legs, and other body parts during metamorphosis.
2. Zoom Out: This caterpillar is part of a larger ecosystem where it serves as both herbivore (eating milkweed plants) and prey (food for birds and spiders), contributing to the food web and helping with plant pollination when it becomes an adult butterfly.

## Discussion Questions

1. What do you notice about the caterpillar's colors and patterns? (Bloom's: Observe | DOK: 1)
2. Why do you think the caterpillar has bright stripes instead of being green like the leaves? (Bloom's: Analyze | DOK: 2)
3. What do you predict will happen to this caterpillar as it grows? (Bloom's: Predict | DOK: 2)
4. How might the caterpillar's appearance help it survive in nature? (Bloom's: Evaluate | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "The caterpillar turns into a butterfly overnight."  
Reality: Metamorphosis takes time - the caterpillar must grow through several molts, then spend 1-2 weeks in the chrysalis stage.
2. Misconception: "All caterpillars become butterflies."  
Reality: Some caterpillars become moths, and they have different characteristics and life cycles.
3. Misconception: "The caterpillar and butterfly are different animals."  
Reality: They are the same animal at different life stages, just like a tadpole and frog.

## NGSS Connections

- Performance Expectation: 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
- Disciplinary Core Idea: 1-LS1.B Growth and Development of Organisms
- Crosscutting Concept: Patterns

## Science Vocabulary

- \* Caterpillar: The young form of a butterfly that looks like a worm with legs
- \* Life cycle: The stages a living thing goes through as it grows up
- \* Metamorphosis: The big changes an animal goes through to become an adult
- \* Larva: The stage when a young insect is growing and eating lots of food
- \* Molt: When an animal sheds its old skin to grow bigger

## External Resources

### Children's Books:

- The Very Hungry Caterpillar by Eric Carle
- From Caterpillar to Butterfly by Deborah Heiligman
- Monarch Butterfly by Gail Gibbons

### YouTube Videos:

- "Monarch Butterfly Life Cycle" - Time-lapse footage showing complete metamorphosis from egg to butterfly: <https://www.youtube.com/watch?v=ocWgSgMGxOc>
- "Caterpillar Facts for Kids" - Educational video about caterpillar characteristics and behaviors: [https://www.youtube.com/watch?v=2m5NwTn\\_JME](https://www.youtube.com/watch?v=2m5NwTn_JME)