

## Photo Description



Green moss grows on gray and pink rocks. The moss is soft and fuzzy. The rocks have different colors like pink, gray, and green.

## Scientific Phenomena

This image shows biological weathering as an anchoring phenomenon. The moss is breaking down the rock very slowly by growing on it and making tiny cracks bigger. The moss also holds water against the rock, which helps break it apart over time. This is one way that living things change the Earth's surface by breaking big rocks into smaller pieces.

## Core Science Concepts

1. Living vs. Non-living Things: Moss is alive and grows, while rocks are not alive but can be changed by living things.
2. Weathering Process: Living things like moss can slowly break down rocks by growing in small cracks and holding water.
3. Habitats: Moss can live on rocks because it gets what it needs - water, air, and a place to attach.
4. Earth's Surface Changes: The Earth's surface changes slowly over time when living things interact with rocks and soil.

### Pedagogical Tip:

Use real moss and rocks for hands-on exploration. Let students touch both materials to feel the difference between living moss (soft, spongy) and non-living rock (hard, rough). This concrete experience helps kindergarteners understand the living vs. non-living concept.

### UDL Suggestions:

Provide multiple ways to explore this concept: visual observation of the photo, tactile exploration with real specimens, and kinesthetic activities like acting out how moss "hugs" rocks. This supports different learning preferences and abilities in your kindergarten classroom.

## Zoom In / Zoom Out

1. Zoom In: The moss has tiny root-like parts called rhizoids that grow into small cracks in the rock. These parts release acids that slowly dissolve minerals in the rock, making the cracks bigger over time.
2. Zoom Out: This weathering process happens all over Earth and helps create soil. When rocks break down, they mix with dead plants and animals to make the soil that helps bigger plants grow in forests and gardens.

### Discussion Questions

1. What do you notice about how the moss is growing on the rock? (Bloom's: Observe | DOK: 1)
2. How do you think the moss is able to live on the hard rock? (Bloom's: Analyze | DOK: 2)
3. What might happen to this rock after many, many years with moss growing on it? (Bloom's: Predict | DOK: 2)
4. Where else have you seen moss growing in nature? (Bloom's: Remember | DOK: 1)

### Potential Student Misconceptions

1. Misconception: "Rocks never change because they are hard."  
Clarification: Rocks do change, but very slowly over long periods of time. Living things like moss can help break them down.
2. Misconception: "Moss is hurting the rock."  
Clarification: Moss isn't trying to hurt the rock - it's just trying to find a good place to live and grow.
3. Misconception: "Only big things can break rocks."  
Clarification: Even tiny living things like moss can slowly change rocks over many years.

### NGSS Connections

- Performance Expectation: K-ESS2-1 - Use and share observations of local weather conditions to describe patterns over time
- Disciplinary Core Ideas: K-ESS2.D - Human impact on Earth and the environment
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used as evidence

### Science Vocabulary

- \* Moss: A small, soft green plant that grows in damp places.
- \* Weathering: When rocks slowly break down into smaller pieces.
- \* Living: Something that grows, needs food and water, and can make more of itself.
- \* Non-living: Something that does not grow or need food and water.
- \* Habitat: The place where a plant or animal lives and gets what it needs.

### External Resources

Children's Books:

- A Rock Is Lively by Dianna Hutts Aston
- Rocks and Minerals by Rebecca Hirsch
- Who Grew My Soup? by Tom Darbyshire

YouTube Videos:

- "Living and Non-Living Things for Kids" - Educational video showing examples of living vs non-living things in nature: <https://www.youtube.com/watch?v=sKGBQx4OVts>
- "How Do Rocks Change? Weathering for Kids" - Simple explanation of how rocks break down over time: <https://www.youtube.com/watch?v=1gU3kbEMOvs>