

Caddisfly Activities



Meet the Caddisfly: The Tiny Architect of Freshwater

Think of the caddisfly larva as a STEM rockstar in disguise—biology, engineering, chemistry, and environmental science all rolled into one tiny bug.

Caddisflies live in freshwater streams and rivers, where the larvae build protective cases out of whatever they find: sand grains, twigs, leaves, even fish scales. They use silk (produced from glands near their mouths) like a natural glue gun. These "bug-built" cases are perfect for teaching about biomimicry, adaptation, and habitat.

But caddisflies aren't just impressive engineers—they're environmental indicators. Their presence (or absence) helps scientists and students alike assess water quality. Caddisflies only thrive in clean, well-oxygenated water, making them an ideal focal point for hands-on stream monitoring activities.

At home, in the classroom or in the field, the caddisfly offers a powerful way to connect youth to freshwater ecosystems, biodiversity, and real-world science. We hope you will enjoy learning about the caddisfly through these hands-on activities.

Caddisfly Case Craft

Materials you will need:

- Small tubes (paper towel roll cut in half or toilet paper rolls)
- Natural materials such as small twigs, leaves, or pebbles
- Glue or double-sided tape
- Markers or stickers (optional for decorating)
- Caddisfly body print out and cut out

Step l

Collect your natural materials from nature such as leaves, sticks, or pebbles.





Color and cut out your caddisfly printout to fit inside your tube with the head poking out.



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Using glue or double sided tape, use the natural materials to decorate your caddisfly body (tube).

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1. Caddisfly Case Crafting

Objective: Teach kids about how caddisflies use materials to build protective cases and how they are adapted to their environment.

Materials:

- Small tubes (could be paper towel rolls cut in half or toilet paper rolls)
- Natural materials such as small twigs, leaves, or pebbles
- Glue or tape
- Markers or stickers (optional for decorating)

Step-by-Step Instructions:

- 1. **Explain the Concept**: Tell the kids about how caddisflies use their environment to collect materials like leaves, rocks, and twigs to create a protective "case" around their bodies. This helps them avoid predators and survive in freshwater.
- 2. **Collect Materials**: Have the children go outside or collect a variety of small natural materials. You could also provide a few pre-made materials like beads, buttons, and fabric for extra creativity.
- 3. **Color and cut out the Body**: Using this <u>link</u>, print out the caddisfly body to color and cut out. The body can be inserted into the tube with the head poking out.
- 4. **Create the Case**: Give each child a tube (representing the caddisfly's case) and let them glue or tape the collected materials to the tube. They can be as creative as they want with the materials they use each caddisfly case is unique!
- 5. **Discussion**: Once the cases are made, sit down with the children and talk about how different materials might serve different purposes in the wild (e.g., rocks for protection, leaves for camouflage). Ask them how they think their creations could protect them if they were caddisflies.

Fun Tip: Set up a "Caddisfly Case Gallery" and let the kids showcase their creations!



2. Caddisfly Life Cycle Wheel

Objective: Teach kids about the four stages of the caddisfly's life cycle: egg, larva, pupa, and adult.

Materials:

- Paper plates or large circles of cardboard
- Crayons, markers, and colored pencils
- Scissors
- Glue
- Optional: Pictures or stickers of caddisflies and their habitats

Step-by-Step Instructions:

- 1. **Create the Wheel**: Cut the paper plate into four equal sections. Each section will represent one stage of the caddisfly life cycle.
- 2. **Draw the Life Cycle**: In each section, help kids draw or paste pictures that represent each life cycle stage. You can label each section:
 - Egg: A small cluster of eggs laid by the female caddisfly in the water.
 - **Larva**: The caddisfly larva creates its protective case from materials in the water.
 - **Pupa**: The resting stage when the larva transforms into an adult.
 - Adult: The adult caddisfly that flies above the water and later lays eggs, starting the life cycle over.

- 3. **Attach the Wheel**: Punch a small hole in the center of the plate and fasten it with a paper fastener so the wheel can spin.
- 4. **Explore and Learn**: As kids spin the wheel, they can go through each stage of the life cycle and learn how the caddisfly grows and survives at each stage.

Fun Tip: Create a "Caddisfly Life Cycle Song" or chant for the kids to sing as they spin the wheel!



3. Stream Exploration (Or Backyard Stream Simulation)

Objective: Teach kids about stream ecosystems and the habitat of caddisflies. Learn to identify signs of healthy water.

Materials (for real stream exploration):

- Safety gear (water shoes, nets, containers, magnifying glasses)
- Bug identification guides (optional)

Materials (for backyard stream simulation):

- A large plastic container or shallow pool
- Sand, rocks, twigs, and leaves

- Small plastic insects or other "aquatic life"
- Water

Step-by-Step Instructions (for real stream exploration):

- 1. **Preparation**: Discuss safety before venturing to the stream (e.g., wearing water shoes and avoiding fast-moving water).
- 2. **Exploring**: Have the kids carefully dip their nets into the water to collect insects and look for caddisfly larvae in the streambed. Use magnifying glasses to closely observe the larvae and their protective cases.
- 3. **Identification**: Teach kids to identify caddisfly larvae by the cases they create. If you find a caddisfly larvae, ask the kids to describe what the case is made of and why it might be helpful in an aquatic environment.
- 4. **Stream Health**: Discuss the importance of clean water and why protecting these ecosystems is essential for caddisflies and other wildlife.

Step-by-Step Instructions (for backyard stream simulation):

- 1. **Create the Stream**: Set up a small "stream" using a large plastic container. Fill it with water and arrange rocks, sand, and twigs to create a natural habitat for aquatic insects.
- 2. **Simulate the Stream Life**: Add small plastic insects or have kids create their own aquatic life using modeling clay or construction paper.
- 3. **Discuss the Habitat**: Explain how caddisflies and other insects live in streams, and have kids experiment with creating small "cases" from the materials available in the stream.
- 4. **Clean-Up**: Teach kids about the importance of keeping these environments free from pollution and discuss how they can help protect real streams.



4. Caddisfly Storytime and Creative Writing

Objective: Encourage kids to think creatively about the caddisfly's life and imagine adventures.

Materials:

- Paper
- Crayons or markers
- Examples of caddisfly facts or short stories

Step-by-Step Instructions:

- 1. **Storytime**: Read a short story or fun fact about caddisflies, such as how they build their cases or how they survive in different environments.
- 2. **Creative Writing**: Ask kids to imagine their own caddisfly adventures. They can create a story where the caddisfly faces challenges or goes on an adventure, using its unique abilities to survive.
- 3. **Illustration**: Have kids draw illustrations of their stories—whether it's a heroic caddisfly or a journey through a stream.
- 4. Sharing: Allow the kids to share their stories with each other or display them for everyone to see.

Caddisfly larvae are important bioindicators!

Their presence or absence can reveal qualitative information about the health of a waterway because they are very sensitive to pollution.

In streams and rivers that have been affected by human activities and pollution, there are significantly lower overall numbers and species diversity of larvae compared to a high quality waterway with an abundance of larvae.

> Trichopterans spend very little time as adults, but the larvae are critical partners in scientific biological monitoring efforts. The next time you are out in our waterways, look for tiny organisms encased in debris and think about what that means for the water quality!

Credit: Three Rivers Waterkeeper

5. Grand Finale - Caddisfly Quiz and Fun Facts Game!

Objective: Reinforce knowledge about caddisflies in a fun, competitive way.

Materials:

- Printed or handwritten quiz questions
- Small prizes (nature-themed stickers, plants, or crafts)
- A timer (optional)

Step-by-Step Instructions:

1. **Prepare Questions**: Create a list of 10-15 simple trivia questions about caddisflies. Here are some examples:

- What do caddisflies use to make their protective cases? <u>Answer</u>: Natural materials such as leaves, sticks and pebbles.
- Where do caddisfly larvae live? <u>Answer</u>: Caddisflies live in healthy rivers and streams.
- <u>True</u> or False: Caddisflies can build their cases using twigs and leaves.
- <u>True</u> or False: Caddisflies are picky about the items they use to build their cases.
- True or <u>False</u>: Caddisflies eat other insects.
- Do caddisflies need clean water to survive? <u>Answer</u>: Yes
- Are caddisflies prey for fish and other carnivorous insects such as dragonflies? <u>Answer</u>: Yes
- What do caddisflies use to bind the natural materials together when creating their cases? <u>Answer</u>: Silk
- How long can caddisflies live in the larval stage? <u>Answer</u>: Up to 2 years
- What is the primary responsibility for the caddisfly when it becomes an adult? <u>Answer</u>: Reproduce
- 2. **Host the Game**: Ask the kids to answer the questions either individually or in teams. Use a timer for each question to keep things exciting!
- 3. **Prizes**: Award small prizes for correct answers to keep everyone motivated. Consider fun, nature-themed prizes like small potted plants, bug stickers, or a nature exploration kit.

Fun Tip: Add a "Caddisfly Fact of the Day" at the beginning of the game for extra learning!