

Department of Public Works and Environmental Services





Create a Caddisfly

THIS ACTIVITY WILL:

- Explain how scientists use caddisflies to determine stream health.
- Provide you with step-by-step instructions on how to make your very own caddisfly craft!

EXPAND YOUR LEARNING

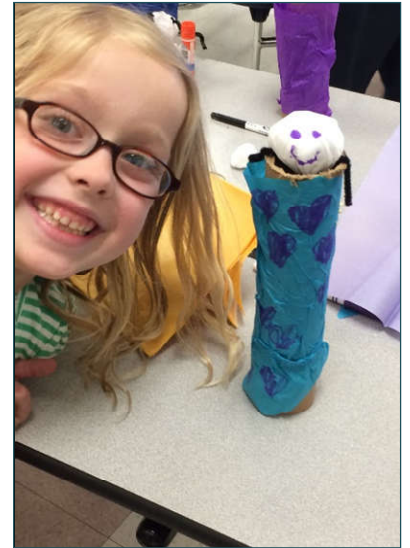
Want to build off this lab with other lessons? Some related topics you might want to cover include:

- Life cycles
- Habitats and Ecosystems
- Watersheds
- Properties of Water

The following **Virginia Standards of Learning** can be covered all or in part using this lab or connect to related topics that can be covered in concurrent or follow-up lessons:

Kindergarten: K.1, K.4, K.6, K.7, K.10, K.11
1st Grade: 1.1, 1.5, 1.8 || 2nd Grade: 2.1, 2.4, 2.5, 2.8
3rd Grade: 3.1, 3.5, 3.7, 3.8 || 4th Grade: 4.1, 4.3, 4.8
5th Grade: 5.1, 5.8 || 6th Grade: 6.1, 6.6, 6.8, 6.9

More information about the Virginia Science Standards of Learning can be found on the Virginia Department of Education website at doe.virginia.gov





Let's Learn About Benthics!

WHAT IS A BENTHIC MACROINVERTEBRATE?

Have you heard the term “**benthic macroinvertebrate**” before? Big word, right? So, let's break it down.

- **Benthic** means lives on the bottom of a stream.
- **Macro**, the opposite of micro, means you can see it with your eyes (no microscope needed).
- **Invertebrate** means no backbone. Like a worm, clam, dragonfly, or crayfish.

We call them **benthics** for short. Many aquatic benthics that we are going to discuss in this lab are the nymph or larvae stage (the stage after the egg but before the adult) of common adult insects we see flying around in the summer. For example, all dragonflies start their life off underwater before emerging as winged adults. Same for caddisflies!

WHY DO WE CARE ABOUT BENTHICS?

Different benthics can tolerate, or handle, different levels of pollution. Some are very **tolerant**, others are more **sensitive**, and some are in the middle or **moderately tolerant**. Sensitive benthics can tolerate very little pollution in the water. Therefore, we find them in places where the water is healthy and clean. Tolerant benthics can be found in ALL types of water quality, but we find them more frequently in streams that are not so healthy because the water is too dirty for sensitive benthics to live in. Moderate benthics can tolerate some pollution, but not a lot.

Scientists have identified which benthics are tolerant, which are moderately tolerant, and which are sensitive. With this information, we can determine the health of a stream by which benthics live there!



Stonefly larvae (above) are sensitive benthics and are only found in clean, healthy streams. Dragonfly larvae (below) are moderately tolerant and are found in most streams as long as they are not really dirty.





Let's Learn About Caddisflies!



WHAT IS A CADDISFLY?

Caddisflies are one of the benthics that we look at to help determine how healthy our streams are. Some of them are tolerant to pollution and some of them are very sensitive. One way to know which type of caddisfly you're looking at is to look at its house!

CADDISFLIES HAVE HOUSES?

Yes! Many species of caddisflies make houses and then carry them around until they are ready to emerge as adults. While caddisflies have a hard **exoskeleton** on their head and legs, the rest of their body is not protected. In order to protect themselves and hide from predators, different caddisflies build houses from different materials found in their stream.

WHAT KIND OF HOUSES ARE THERE?

Different species of caddisfly make their homes out of different materials. Some caddisflies, called Saddlecase Makers, use small pebbles to make their houses. Pebbles are a heavy material that help them live in faster moving water. Other caddisflies, like Northern Casemakers, make their houses out of pebbles, sand, twigs, bark, and/or leaves (see case pictures to the left). They are found in fast and slow moving water.

Now it's time to make your own caddisfly and house!



Case pictures courtesy of macroinvertebrates.org





How to Create a Caddisfly

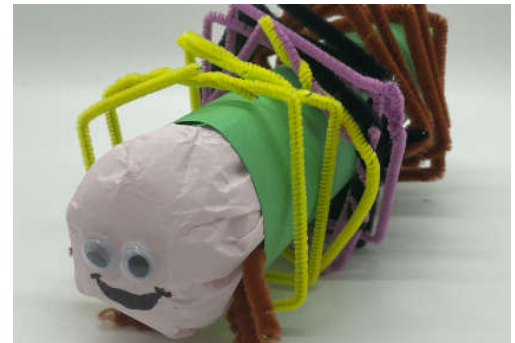


Recommended

- Tape
- Glue
- Scissors
- Tissue Paper
- Construction Paper
- Pipe Cleaners
- Rubber Bands
- Fluff or Newspaper
- Googly Eyes
- Markers

Other Material Options

- Carboard Tubes
- Foam Stickers
- Other Stickers
- Hot Glue Gun
- Popsicle Sticks
- Beads
- Natural Materials
- Felt
- Buttons



Watch a step-by-step video on
how to create a caddisfly!





How to Create a Caddisfly



Step 1

Grab your fluff and tissue paper.



Step 2

Make a "ghost." Close with rubber band.



Step 3

Attach the ghost and legs to a piece of construction paper.



Step 4

Wrap your paper into the shape of a tube. Tape your tube closed.



Step 5

Don't forget to add a face.



Step 6

Time to decorate!

Remember: There is not only one way to put together a caddisfly!

You can use any craft material you have. Try paper towel rolls for the house, stickers instead of tissue paper for decoration, or just drawing on eyes! Maybe even use sticks for legs!





Expand Your Learning

OTHER ACTIVITIES

- Make a more realistic caddisfly (you'll need to add a few steps to get the body correct).
- Identify all parts of a caddisfly.
- Write a poem about caddisflies.
- Try recreating a caddisfly case for a specific caddisfly.
- Research caddisflies online. They are amazing critters!

FAIRFAX COUNTY WATERSHED EDUCATION AND OUTREACH

Fairfax County freshwater ecologists provide free, high-quality, innovative educational programs and teaching tools to audiences ranging from K-12.

For more Watershed Education and Outreach activities and materials visit:
fairfaxcounty.gov/publicworks/stormwater/watershed-education-and-outreach

Contact Us:

watersheds@fairfaxcounty.gov

Watch a video on how to make a caddisfly on our Watershed Education and Outreach website or use <https://bit.ly/3LhDorb> to go directly to the video.



To request this information in an alternate format, please call the Stormwater Planning Division at 703-324-5500, TTY 711. A Fairfax County, Va., publication. August, 2022.

