

## Mussel Power at Home

Freshwater mussel-themed activities for students and their caregivers to complete at home.



### Early Learners (K-2<sup>nd</sup>)

- One thing that makes freshwater mussels special are the hard shells on the outside of their bodies that protect their soft insides. Animals with shells come in all shapes and sizes! Make a list or draw pictures of all the animals you can think of that have hard shells. Which animals on your list could you find in and around the Anacostia River? You can use our "[Beginner's Field Guide to the Plants and Animals of the Anacostia River](#)" to find out!
- Spend some time reading and enjoying the [pictures and poems](#) created by School Within School 2<sup>nd</sup> graders in 2019.
  - Draw your own mussel picture using crayons, pencils, pens or whatever you have at home. You can see photos and learn more about the different types of mussels that live in the Anacostia River [here](#) for inspiration!
  - Write your own [acrostic poem](#) about mussels. Each word you chose to include should describe mussels.
- Just like all living things, freshwater mussels grow from babies to adults! Explore the unique lifecycle of freshwater mussels with [this video](#) from Fairmount Water Works in Philadelphia.
  - If you have a printer at home, print out [this image](#) of a mussel's lifecycle and color it in! If you don't have a printer, you can use this as a reference to create your own version!
  - Pretend to be a mussel at different stages in its lifecycle:
    - Baby mussels are so tiny! Curl up and see how small you can make yourself – just like baby mussel inside its mother!
    - Bob up and down until you get your wiggles out! Baby mussels bob and float in the river until they find a host fish.
    - Find a cozy spot at home with blankets or pillows. Snuggle in just the same way a juvenile mussel would bury in the mud!
    - Take ten deep and slow breaths in and out just the way a mussel does. Try to fill your tummy with your breath.
    - Mussels move by using their foot to pull along the bottom of the river. Try sticking your foot out and sliding along like a mussel does!



- Just like you, mussels get hungry and need to eat! Watch the video from the Fairmount Water Works again and pay attention to the part where they talk about what a mussel likes to eat! Would you like to eat these things? Create a table that shows what you like to eat in one column, and what mussels like to eat in another column. You can use words or drawings.
- Just like you, mussels use their senses to explore the world around them. Freshwater mussels don't have eyes to see (although they can tell if it's light or dark), noses to smell, or ears to hear; but they can feel what's happening in the water around them! They use their whole bodies to sense changes in the water.
  - Read and listen to "[My Five Senses](#)", by author Alikei, to begin learning about your own senses.
  - Explore your own home using your five senses. Complete a [five senses scavenger hunt](#), paying particular attention to your sense of touch.

## Upper Elementary (3<sup>rd</sup> – 5<sup>th</sup>)

1. There are almost 900 kinds of freshwater mussel in the world! Approximately 300 species of mussel live in North America, and eight of those live in the Anacostia River! Differences in mussel characteristics (both external and internal) help scientists determine one kind of mussel from another. This is important when scientists are trying to determine where mussels live and how many of them there are. Often, scientists use drawings to help record and remember what they see when they are conducting research outdoors.

- Create your own observational drawing of a freshwater mussel. Check out the different mussels of the Anacostia River [here](#) and chose one to draw! Be sure to carefully observe any differences in sizes, shape, and color. Next, take a look at [this drawing](#) that names the different parts of the exterior (the outside!) of a freshwater mussel. Label your own drawing with any similar parts that you see.
- Explore [this diagram](#) of the interior (inside) of a mussel! Which body parts does a mussel have that are similar to your own? Use a [Venn diagram](#) to list the similarities and differences. In one circle, write down body parts that only mussels have. In the other circle, write down body parts that only you have. In the middle (where the two circles overlap) write down any body parts that you share with freshwater mussels!

2. Like all living things, freshwater mussels are born, grow from baby to adult, and eventually die. However, freshwater mussels have an interesting and unique lifecycle that is different from our own! Explore the lifecycle of a freshwater mussel using these three videos.

- <https://vimeo.com/202108059>
- <https://www.youtube.com/watch?v=UqSXB4W9BFo>
- <https://www.youtube.com/watch?v=QahiUJ-JIF8>

After watching these videos, take a look at [this image](#). Write a paragraph that describes the lifecycle of a freshwater mussel and what is happening in this image. If you have a printer at home, you can print the image out and color it in!

3. Like all animals, freshwater mussels need food, water, shelter (a spot to feel protected), and space to survive. The places where an animal can find all of these things is called a habitat. Check out [this webpage](#) and [this webpage](#). When you are visiting these webpages, think about what mussels eat, where they find shelter, etc. Using materials you can find at home, create a diagram (2-D drawing) or diorama (3-D model) of an ideal freshwater mussel habitat!



4. Freshwater mussels help to filter and clean the water in the rivers where they live! They also provide a lot of other benefits! Click through the Anacostia Watershed Society's "[Mussel Story Map](#)". Using the information you learn there, create a poster that explains the benefits of freshwater mussels and would convince someone to "adopt" mussels in the stream or river near their home just like students at Brent Elementary School did!

**BONUS:** [This Freshwater Mussel Activity Book](#) from the North Carolina Freshwater Mussel Conservation Partnership has fun mazes, word searches, and coloring pages. Check it out!

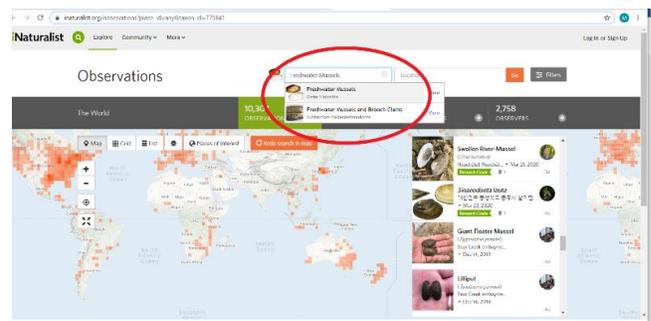
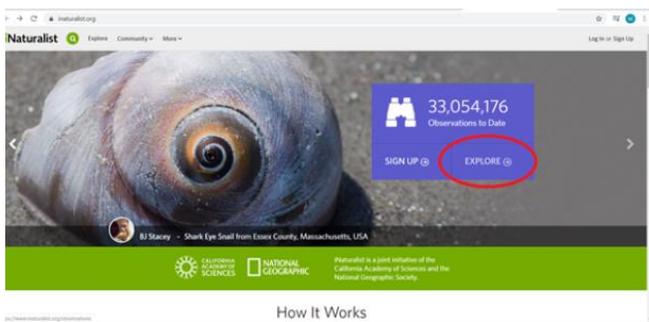


## Middle and High School (6<sup>th</sup> – 12<sup>th</sup>)

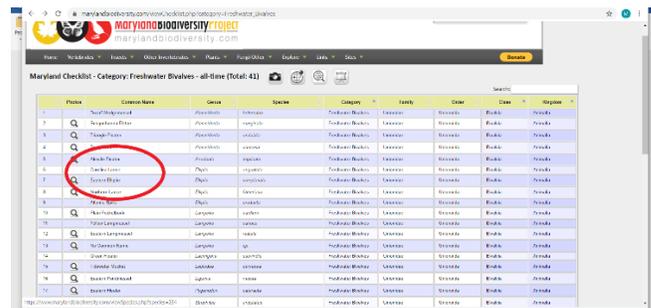
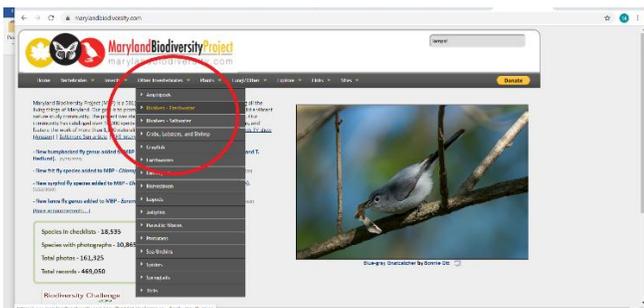
1. Explore the world of mussel reproduction by watching [this video](#) about Lampsilis mussels in the streams of Missouri and reading [this article](#) from Wired magazine. The relationship between freshwater mussels and their host fishes is fascinating. Review different types of ecological relationships by watching [this video](#). Write a short paragraph that describes the relationship between a freshwater mussel and its host fish. How would you describe the relationship between a freshwater mussel and its host fish? Can you think of other animal relationships that fall into this same category?

2. Visit the Anacostia Watershed Society’s [“Mussel Story Map”](#) to learn more about the needs of freshwater mussels and which species of freshwater mussel can be found in the Anacostia River. Then, review the different types of biodiversity by visiting [this webpage](#). Using the links below, explore mussel species biodiversity! Where are freshwater mussels located in the world? In the state of Maryland? Where can you find the greatest freshwater mussel species biodiversity? Why do think that is?

- Visit [inaturalist.org](#). Click on “Explore”. Type “freshwater mussels” (Order Unionida) into the search feature. Check out the map and explore freshwater mussel entries from community members all over the world! Where are the most entries located? Do you think these entries accurately reflect global mussel species biodiversity? Why? Why not?



- Visit the [Maryland Biodiversity Project](#). Go to the “Other Invertebrates” tab at the top of the page. Select “Bivalves – Freshwater” from the drop-down list. On the page that follows, click any of the species names in the list you see to take you to that individual species’ page. Explore! What species are there the most records for in Maryland? Do you think these records accurately reflect mussel species biodiversity in the state of Maryland? Why? Why not?



3. Learn more about mussel anatomy and physiology and consider which physical characteristics are used to identify different species of mussel. Watch a [mussel dissection](#) and take a look at the Maryland Department of Natural Resources [Guide to the Freshwater Bivalves of Maryland](#) to get a feel for how biologists, ecologists, and other researchers identify freshwater mussels.

4. Zebra mussels are an invasive species of freshwater mussel first introduced to the United States back in 1988. Although zebra mussels are not currently a problem in the Anacostia and Potomac Rivers, they do pose a significant threat to native mussels in other areas of the United States. Explore the impact that zebra mussels have had on populations of native mussels in the Hudson River in New York by visiting [this interactive webpage](#) from the American Museum of Natural History. Also explore photography, writer, and activist Krista Schyler's interactive [story map of the Anacostia River](#). What aspects and features do the Hudson and the Anacostia have in common? Based on what you have learned, do you think the Anacostia River could be impacted by zebra mussels in the future?

5. Visit a few of the following webpages to learn more about additional threats to freshwater mussels and some of the cool solutions that have been proposed. After reading, summarize what you have learned about the threats that freshwater mussels face, as well as some of the things that we can do to address these challenges. What is the Anacostia Watershed Society doing to address these challenges?

- [This article](#) from Scientific American features the work of the Harrison Lake National Fish Hatchery – the same folks who are working with the Anacostia Watershed Society to restore mussels in the Anacostia.
- [This article](#) from Knowable Magazine discusses all the great things that mussels do, and how we can help!
- [This article](#) from the Xerces Society discusses some of the challenges that mussels face.
- [This article](#) provides info about freshwater mussels and their relationship with the button and pearl industries!



6. Freshwater mussels and the efforts being taken to restore and conserve them inspire individuals all over the world. Check out [these murals](#) created by community artists that feature freshwater mussels! Using materials you have at home (markers, crayons, pen and pencil, Paint 3D) design a small-scale mural that features some of the freshwater mussels local to the Anacostia River. Get creative and see if you can incorporate other animals and plants of the Anacostia River and its surrounding communities. You can use our [“Beginner’s Field Guide to the Plants and Animals of the Anacostia River”](#) for inspiration, or talk a walk around your neighborhood to see what you can find! Bring your phone to take photos that you can use as a reference for your mural design.



7. Visit [this webpage](#) from the U.S. Geological Survey to learn more about what freshwater mussels need to survive. If you were to create an ideal mussel environment, what would you include? You can write a list, complete a drawing, or construct a 3-D diorama to communicate your ideas.

LEARN MORE about the Anacostia Watershed Society's environmental education programs by visiting: <https://www.anacostiaws.org/what-we-do/education.html>