



Description

In this lesson, students will be introduced to the concept of a watershed and learn about their own watershed. Students will use Google Earth to get to know their local watershed and to identify features of a watershed. Students will begin to understand what scientists study in a watershed, identify their own interests about the watershed.

Guiding Questions • What is a watershed? Which one do we live in? What local stream or river do we live close to? Where does the water from that stream or river go? To a bigger stream or river, to a lake, and/or to the ocean. What does it mean for a watershed to be healthy?

Preparation

Teachers will need to spend time researching the watershed you and your students will work with and familiarize yourself with the Northwest Arkansas headwaters (where a stream begins), mouth (where it meets and flows into another body of water, such as another stream or the ocean), and other important features (such as incoming streams or dams) along the stream you are studying. If you haven't already used Google Earth, you will want to spend some time becoming familiar with it and identifying the key features of your watershed that you would like to point out.

You can download Google Earth at <https://www.google.com/earth/>

If you have not previously discussed watersheds with your class, you may want to do a lesson that provides a basic introduction before beginning this lesson. This would also be a great time to bring in Native Expeditions staff to conduct a watershed-based activity with your class.

Activity Introduction

Our local watersheds are natural resources for survival. Students will work in teams to design a field investigation they can conduct in their watershed.

Discuss the following as a class:

- We depend upon our natural resources for our health and needs such as clean air, food, and clean water.
- We monitor our resources, such as streams, to better understand the health of our resources.
- We will be planning an investigation in teams as a way to study and learn more about our local community, identify the needs of our local watershed, and discover what sort of work is done to maintain a healthy stream and watershed.

Part 1: What Does Your Watershed Need?

1. Using Google Earth, project your watershed at the front of the class, or assist students in navigating Google Earth to find their watershed. If you are using Google Maps, open and select the Terrain or Satellite view. Type into the Search box the locations you are interested in exploring (e.g., your school's address, a local creek, etc.) or click on the map to select each.
2. Save each location and, once you have the map locations, explore. Zoom in and out; use Street View and Photos to virtually visit each site. Point out landmarks such as recreation areas, access locations, schools, businesses, and parks to give students a better sense of place.
3. As a class, identify the following characteristics and discuss: • What do you notice about our watershed? Where does our stream start? • Where does the water travel before entering the stream? Over land, soil, rock, or pavement, and/or through the ground.

Elements include: correct temperature and chemical properties of the water, adequate tree and plant coverage for habitat and for filtering/slowing water, very little bank erosion, low levels of invasive species, etc. All of these attributes affect our drinking water.

4. Who and what lives in a watershed?
People, fish, birds, our pets, deer, and other wildlife. Students can explore their community watersheds for organisms easily on their own in shallow waters with supervision. Our streams include features that are living and nonliving things, including buildings, rocks, soil, trees, and plants, all "live" in our watershed. Even your school and your house are part of your watershed.
5. How do we impact our watershed?
Recreation such as hiking, fishing or camping can impact the watershed. We can have a negative impact by not properly disposing of pet waste or garbage, washing the car in the driveway or allowing other pollutants to run into the street and/or storm drains, allowing invasive species to grow in their yard, etc. There are also a number of ways that we can positively impact our watershed, such as removing invasive species and/or planting native plants.

Outdoor Stream Exploration - Part 2

Start talking about potential places where students could collect data and/or conduct a field investigation. Work as a class to help students identify:



- a nearby stream or river NWA National Wild and Scenic public river access locations (Buffalo, Kings, Mulberry and Big Piney Creek) are a good place for easy access locations,

- other potential areas to collect their data for a field investigation if limited to your local community are typically tributaries, creeks and streams that feed into our bigger rivers (Illinois or White River watersheds)

5. Let students know they will be going out into the watershed to learn more about it! Now is a good time to contact Native Expeditions staff for a group of students to receive training in water quality testing at a Watershed Leadership Academy. However students can explore with adult supervision to view habitat surrounding stream, wildlife present, and clarity/turbidity of water, weather/temperature, erosion, sedimentation, and runoff without entering a stream at all.
6. Have students share their interests with a partner and then with the class.
7. Hand out 3x5 cards and ask students to write down their top three interests or questions on the cards. Use these cards to arrange students into groups based on their interests or to develop a class research question.
8. In a Stream Team Group - Establish a data reporting collector, 1-3 water chemistry leaders, 2-4 habitat inspectors, and 2-4 biodiversity (macroinvertebrate) investigators
9. Register to be a AGFC Stream Team <https://www.agfc.com/en/education/onthewater/streamteam/>



Outdoor Stream Data Collection - Part 2



10. Once your Stream Team (ST) has designated a area of stream, river, or lake to be sampled and have applied to be a ST, then training by the Arkansas Game and Fish area ST Coordinator, USFS Fisheries Biologist, or by Native Expeditions staff at a Watershed Leadership Academy event, it is time to seek funding for a AGFC mini grant for equipment or otherwise contact staff to borrow macro-invertebrate kick nets, ID cards, water

chemistry set, collection trays, tubs, tables and waders to access the waterbody.



11. The LaMott Water Quality Kit offered by the AGFC can allow your ST to take temperature, pH, nitrates, phosphates, dissolved oxygen, etc. for your waterbody.

12. It is important to establish ST leaders who will be responsible for different activities during the assessment to record data that will be reported to the AGFC and/or Native Expeditions. Your Stream Inventory Report for Biological Data within your AGFC Stream Team folder will need to be filled out to assess for macro-invertebrates. Its a good idea to make more than 1 copy to have with you on hand in case one gets wet.



13. Recording your water chemistry data can be recorded separately or on the same Stream Inventory Report. Be sure to carefully read all directions on water chemistry data sheets for each test to perform accurately.



14. Take photos of your data collection recordings for back up to rely on the accuracy of your data for reporting.

