Nature at School Pre-lesson

Water World

See what your students know:

Use this fun Kahoot to help the DNR understand what your students know on this topic before the program.

Learning outcomes:

Join DNR educator Katie McGlashen from the Waterlook Recreation Area to help you understand what watersheds are and why they are important for humans and aquatic species. We will also discuss how bodies of water within a watershed create pathways needed to support a healthy fish population. This 30-minute presentation will meet these learning outcomes:

- Learn what watersheds provide for humans and wildlife.
- Review how precipitation can follow different pathways within a watershed.
- Learn how the DNR manages watersheds within the Great Lakes basin.
- Understand how humans can impact their local watershed.

Background information:

A watershed is an area of land that drains rainwater or snow into one location (outlet). Examples of outlets could be a stream, lake, or wetland. These bodies of water supply our drinking water as well as water for agriculture and manufacturing, offer opportunities for recreation, and provide habitat for numerous plants and animals. Various forms of pollution can interfere with the health of the watershed; so it is important to protect the quality of our watershed.

If you locate good trout fishing streams in Michigan, you will notice that the streams are clustered together in certain regions. These areas provide coarse soils, limited development, and lots of groundwater. Rivers that are fed primarily through groundwater rather than runoff have a steady cold flow of water. Cold water holds more oxygen and can better support sensitive insects and trout.

Resources:

- Michigan Watershed Teacher's Guide
- Great Lakes Fast Facts

Suggested pre-activity:

• Have students identify their local watershed using the Watershed Teaching Guide.

Questions to ask:

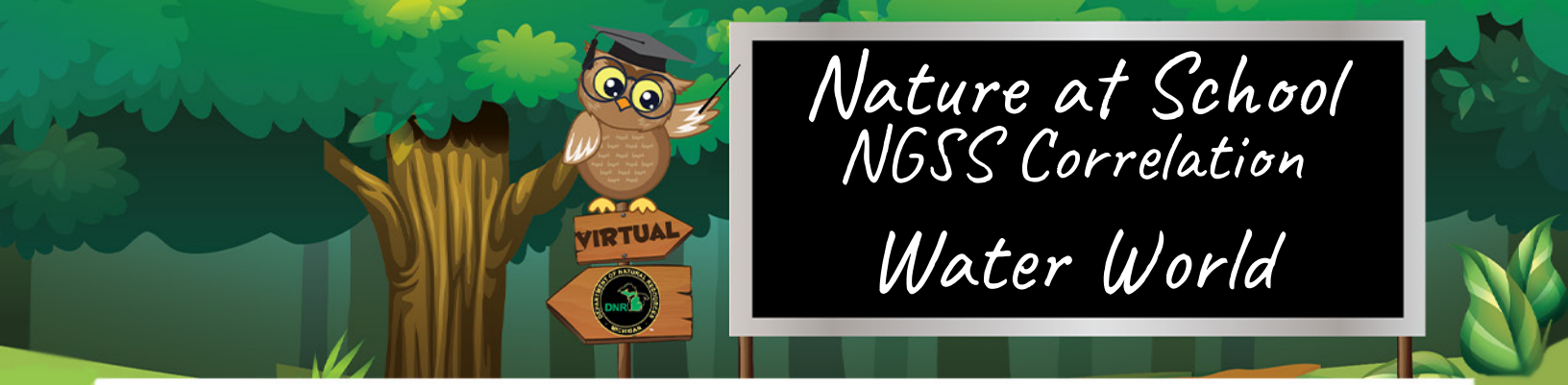
1. What watershed do you live in?
2. Locate the major river(s) in your watershed.
3. Follow the flow of water from your watershed to one of the Great Lakes.
4. How would you rate the health of your watershed? (good/fair/poor) Support with a reason.

Directions for your *DNR Nature at School* virtual program:

1. You will receive a reminder email from SignUp Genius three days prior to your scheduled *DNR Nature at School* program. Please read and follow the directions, so we all can have a successful program.
2. At least one day prior to your lesson, send your instructor the link to your Zoom/Google Meet/Skype/Teams for your lesson time. Starting 10 minutes early with just your instructor is encouraged.

Day of

3. Make sure students have their sound muted and their cameras on to participate (with thumbs up, number on fingers).
4. If you use the chat feature, we encourage the students to ask their questions there, and the teacher can ask them at the end of the program.
5. See further directions in your SignUp Genius confirmation.



Nature at School NGSS Correlation

Water World

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Guiding question/phenomenon:

What is the significance of the connections between waterways, wildlife and habitat for humans and healthy natural populations?

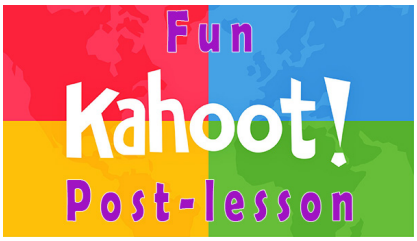
Science and Engineering Practice	Disciplinary Core Idea	Cross Cutting Concepts
Constructing Explanations and Designing Solutions Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations and peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. • Students research and simulate groundwater flow and explain through a model in post-activity, after real world examples from Michigan biologists. **Engaging in Argument from Evidence** Evaluate the claims, evidence and reasoning behind currently accepted explanations or solutions to determine the merits of arguments. • Students followup on biological data from the lesson through research, and defend their findings.	**ESS3.C: Human Impacts on Earth Systems** The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. • Students learn Michigan examples during the virtual lesson. **LS2.C: Ecosystem Dynamics, Functioning, and Resilience** Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. • Students will learn examples of Michigan human, plant and wildlife dynamics.	**Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural or designed systems. • Students understand where precipitation falling in their community will travel through their watershed. **Stability and Change** Small changes in one part of a system might cause large changes in another part. • Students understand that there are negative and positive impacts based on human, wildlife, fish and plant interactions, and reflect on the impacts of local phenomena.

Recommended grade band(s): middle school and high school
All Nature At School virtual programs have been created to introduce students at any grade level to life and/or earth science core ideas, when used with pre- and post-lesson suggestions.

Nature at School
Post-lesson
Water World

See what your students learned:

Use this fun Kahoot to help the DNR understand what your students know on this topic, after the program. This data helps the DNR create and update free programming for teachers across the state.



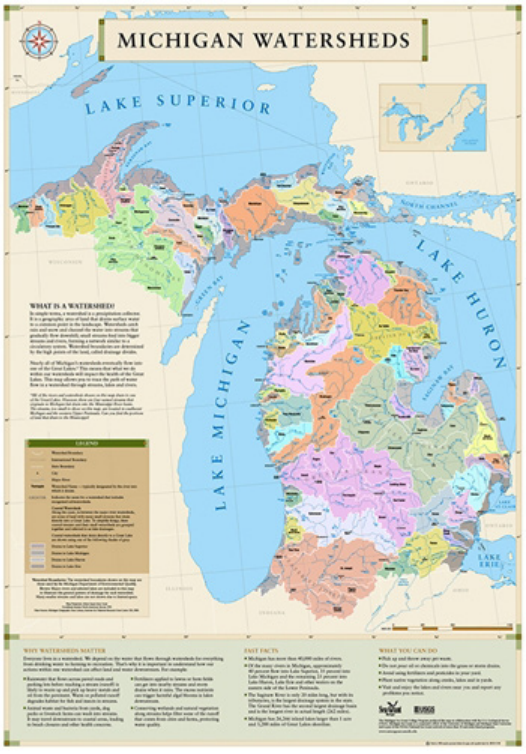
Activity wrap-up:

Fish and wildlife rely on watersheds because they contain pathways for animals to travel to find food, spawning (breeding/nesting) sites, and cover from predators. Humans benefit from having healthy watersheds, which in return provide drinking water, water for growing crops and supporting livestock, recreational activities and providing habitat for plants and animals.

- A watershed is a precipitation collector that directs water to a common point.
- Watershed boundaries are determined by terrain (high points) of the land.
- Watersheds provide passageways for fish, wildlife, and humans to move.

Resources:

- Water Resources Education Program
- Exploring Watersheds
- Water is Worth It video
- Water Science School



Post-activity to Connect to Home:

Create your own edible watershed.
Materials needed:

- graham crackers (for the base)
- tube frosting colors (blue, green, brown) to create watershed map

Questions to ask students:

- Is your watershed going to show elevation (mountains and hills)?
- Will it have different bodies of water (lakes/rivers)?
- Is there healthy vegetation to protect shorelines?
- Is your landscape urban or rural?
- Where will the water flow to its destination?

Connect with DNR content:

For a daily dose of nature, like MiNatureDNR on Facebook.

Visit the DNR Nature at Home page for educational video series, resources, lessons, virtual tours and more.