Nature at School Pre-lesson

Wetland Mechanics

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 Jonathan Massung at the Tobico Marsh, a Natural National Landmark, in Bay City State Park. Tobico is a unique coastal wetland habitat, home to many threatened or endangered species, and one of the few healthy and thriving examples left in the Great Lakes region as a result of professional management. This 30-minute presentation will meet these learning outcomes:

- Identify characteristics common to a wetland habitat like Tobico Marsh.
- Explain the positive impacts a wetland habitat has on our local environment.
- Identify representatives of species found in a marsh that affect the local habitat's biodiversity.
- Describe adaptations that species have developed, allowing them to thrive in a marsh.

Background information:

Healthy wetlands, like the Tobico Marsh, are special habitats that can have a huge impact on our local communities. Students will discover how wetlands can affect local clean water, flood waters, and biodiversity (the variety of plants and animals in an ecosystem).

This lesson will identify three main functions of a wetland through an interactive experience, by presenting pictures, video, and problem-solving discussions that help make the case for the importance of healthy wetlands. Students will be guided through an experiment using a watershed model that demonstrates the effects of water in a community with and without wetlands. Some animals will also be identified as key species that help manage or rely on a wetland habitat. Through this activity, students will have a good grasp on a wetland's impact that will help guide them into further investigations of natural impacts on waterways.

Resources:

- How Wolves Change Rivers
- What is a Watershed
- What is Biodiversity

Suggested pre-activity:

- Prior to the program: assign each student one item from this list to bring to the program: sponge, baby item, pillow, strainer or filter, mixing tool, flower, or food item.
- Wetland animal Google investigation: Students search Google to find animals that call Michigan wetlands

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

Wetland Mechanics

Discover how Michigan's largest coastal marsh provides clean water, and habitat for wildlife and plants with unique adaptations.

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Guiding question/phenomenon:

How do wetlands impact our groundwater?
Why do specific adaptations make plants and wildlife thrive in a wetland?

Science and Engineering Practice	Disciplinary Core Idea	Cross Cutting Concepts
Analyzing and Interpreting Data Analyze and interpret data to provide evidence for phenomena. • Students will describe what adaptations of plants and animals have the highest occurrence in wetlands and why.	**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 understand Tobico relationships between native and invasive plants and animals, and the system disruptions that may occur in a particular habitat.	**Structure and Function** Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among their parts, therefore complex natural structures/ systems can be analyzed to determine how they function. • Students will explain traits that have been adapted for wetland survival in plants and animals and design a suitably adapted animal.
Asking Questions for Science and Defining Problems for Engineering Ask questions that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information. • After a virtual tour of Tobico plants, animals and built structures, students will evaluate the implications of removing or adding each from the ecosystem.		**Energy and Matter** Changes in energy and matter in a system can be described in terms of energy and matte flows into, and out of, and within that system. • Students will demonstrate their understanding by describing and designing a model wetland ecosystem.

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
Wetland Mechanics

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:

There are many kinds of wetlands in Michigan with different unique characteristics. But all healthy wetlands share three common functions. It is important for students to understand the benefits that a wetland plays in their local community, including water filtration, flood control, and homes for wildlife. This helps them to better understand the complexity of the water cycle and the positive and negative effects water can have in an area.

In addition to understanding wetlands, students will discover ways they are part of the equation and how they can become active citizens in their local watersheds to make positive impacts. By understanding the term biodiversity, students will also begin to develop connections to wildlife needs and needs of humans.

Resources:

- Frog calls of Michigan
- Caring for Our Watersheds
- Exploring the waters around Tobico Marsh

Connect to home:

Students can learn about the impacts of flooding, like the 2020 flooding of the Tittabawassee Watershed with What are Floodplains. Using a digital model, this video looks at how a natural structure, like wetlands, can impact a community when heavy rains can cause flooding. Discussions include natural and human ways to solve the problem.

Post-activities:

- Developing a mini watershed model
- Bio Blitz indoor/outdoor
  - Animal/insect pictures scattered around a room, or outside, for kids to locate and list.
  - Map out findings, chart diversity.
  - Do a Bio Blitz around their home, school or local park using the iNaturalist app.

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.