



# Nature at School Pre-lesson Michigan Dunes: Like No Place on Earth

## 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 educator Elizabeth Tillman from Hoffmaster State Park in Muskegon to learn about the park's dominant landform ... the sand dunes. We will explore how dunes formed and the adaptations that plants and animals use to survive there. Maybe a hognose snake or Fowler's toad will even join the class? After this 30-minute lesson you will be able to:

- List the ingredients or forces that came together to create our sand dunes.
- Name the dune zones or habitats and describe one attribute of each.
- Describe three adaptations of dune plants.
- Name three ways that dune parks benefit people and wildlife.

## Background information:

Michigan's sand dunes are a rare gift that belong to all of us. This diverse collection encompassing 275,000 acres of landforms along a freshwater coastline that has no equal in the world. Public ownership of these landscapes in state parks like Hoffmaster ensures that future generations will be able to see and experience the dunes and shoreline.

Our sand dunes on public lands are managed by resource professionals who work for you and future generations with a dedication to protect special landscapes, provide wildlife habitat, recover rare species, offer diverse recreation opportunities and encourage scientific study. By learning about sand dunes, students will be more aware how dunes formed, where they are located, what forces still work together to make dunes today and how Michigan state parks contribute greatly to the biological diversity of the region by protecting coastal habitats for rare plants, wildlife and people.

## Resources:

- [On the Shores of the Great Lakes](#)
- [Dunes 101](#)
- [Interesting Things About Dunes](#)

## Suggested pre-activity:

- Watch "[Dunes of Michigan](#)" and list two things that surprised you about Michigan's sand dunes.
- Watch the "[Silver Lake Sand Dunes by Drone](#)"
- [Animals of the Dunes](#) worksheet.

## 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

### Michigan Dunes: Like No Place on Earth

Join DNR educator Elizabeth Tillman from Hoffmaster State Park in Muskegon, part of the largest freshwater coastal dune ecosystem in the world. We will explore how dunes formed and the adaptations that plants and animals use to survive there. Maybe a hognose snake or Fowler's toad will even join the class? This 30-minute presentation will meet the following learning outcomes:

- List the ingredients or forces that came together to create our sand dunes.
- Name the dune zones or habitats and describe one attribute of each.
- Describe three adaptations of dune plants.
- Name three ways dune parks benefit people and wildlife.

### Guiding question/phenomenon:

How does the land formation of dunes impact plant and wildlife adaptations?  
How do dune land formations impact threatened and endangered species?

Science and Engineering Practice	Disciplinary Core Idea	Cross Cutting Concepts
<p><b>Obtaining, Evaluating and Communicating Information</b></p> <p>Critically read scientific texts adapted for classroom use to determine the central ideas and/or obtain scientific and /or technical information to describe patterns in and/or evidence about the natural and designed world.</p> <ul style="list-style-type: none"> <li>• Students read and summarize the resources in the pre-activities.</li> </ul> <p><b>Asking Questions and Defining Problems</b></p> <p>Ask questions that arise from careful observation of phenomena, or unexpected results, to clarify and/or see additional information.</p> <ul style="list-style-type: none"> <li>• Students will reflect on the lesson and design a field investigation and essential question in the post-activity.</li> </ul>	<p><b>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</b></p> <p>A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.</p> <ul style="list-style-type: none"> <li>• Students will review Michigan sand dune creation and disturbance over time and its affect on plants and animals.</li> </ul>	<p><b>Stability and Change</b></p> <p>Much of science deals with constructing explanations of how things change and how they remain stable.</p> <ul style="list-style-type: none"> <li>• Students examine dune phenomena.</li> </ul> <p><b>Patterns</b></p> <p>Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products.</p> <ul style="list-style-type: none"> <li>• Students will compare and contrast adaptations specific to dune plants and animals vs. those in other systems.</li> </ul>

**Recommended grade band(s):** upper elementary and middle 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

### Michigan Dunes: Like No Place on Earth

## 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:

Michigan's 275,000 acres of sand dunes are not all the same size or type. Dunes protected within our public parks are as varied as the animals and plants they support. Learning how the dunes formed, where they are located and the diversity within their habitats gives us a greater understanding and appreciation of these special landforms.

About 40% of Michigan sand dunes are in public ownership. They are managed by resource professionals who work for you and future generations with a dedication to protect special landscapes, provide wildlife habitat, recover rare species, offer diverse recreation opportunities, and encourage scientific study. Michigan's lakeshore parks and sand dunes belong to all of us. We can all play a role in taking care of them.

## Resources:

- [Discovering Great Lakes Dunes](#)
- [On the Shores of the Great Lakes](#)

## Connect to home:

Expand your students' knowledge about sand dunes with a [student choice board](#) with nine activities.

## Post-activities:

- Introduce your students to an [acrostic poem](#).
- Students can learn more about dune plants and their adaptations by watching this [video](#) and completing the [In Defense of Plants worksheet](#).



## 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.