| **Indiana Dunes**  **Education** | National Park Service  U.S. Department of the Interior  **Indiana Dunes National Lakeshore**  **Education Department** | National Park Service Logo |
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**Water World**

**Summary:**

Come ready to experience and explore the diversity of life within and around a wetland. Investigate the rich diversity of an interdunal pond. Hike through dune and swale to examine the pond’s surrounding ecosystem of plants and animals.

Learn how the national lakeshore helps preserve these valuable resources and ways you can help too.

**Objectives:** students will be able to

1. name plants and animals that live in and depend on wetland habitats.
2. list ways Miller Woods affects and is affected by the wetland habitats within Miller Woods.
3. construct a food web using organisms found in and around a wetland..
4. describe how he or she could make lifestyle changes to save and keep clean water.
5. explain how the national park helps protect wetlands.



**What to expect on during your trip:**

Group is greeted at the facility. Hikes can begin inside but most of program is outdoors.

The park, the ranger and the theme for the program are introduced.

Various props and activities are brought out and a hike down to the wetland begins.

**Setting:**

The This 1-2 hour program takes place at the Douglas Center and the surrounding Miller Woods. The program hikes through an oak savanna to the various wetlands scattered throughout the dunes

**Grade:**

Geared for 4th -12th

**Ratio of students to ranger:**

There is a maximum of 16 students per ranger unless staffing is limited; then the groups will be larger with the teachers having to help lead.

**Safety Issues:**

Comfortable old walking shoes are needed. Dress for weather. If hot, bring water and bug spray.

**Background Information:**

Protection of our natural aquatic environments in the national lakeshore and the impact surrounding industry has on the park’s aquatic resources is one of the key resource management issues facing the lakeshore.

The high diversity ranking of the national lakeshore within the park system is due to the wetland habitats it encompasses.

Exploration and discovery of this type of habitat is needed in today’s world where we often bypass the fundamentals of the food chain or the smaller creatures and invertebrates of the natural world.

With environmental pressures such as purple loosestrife and phragmites encroaching on these fragile habitats, future stewards are needed to be shown and taught to know and to care for this environment.

**Prerequisite Classroom Activities:**

Before Taboo Game – Based on the popular game, Taboo, make cards about pond life. The students can play it in class after their field trip.

Making water samples – Using water testing kits students can test samples of water from creeks, streams, ponds or lakes around their school.

Making pond surveys – Students can do studies of creeks or ponds, See if pollution, farm runoff, or other factors affect the kinds of organisms they find. Compare their results to a pond protected at INDU.

Create a wetlands mural in class – This could be done before and after the field trip. Suggest they begin with a wetland base then visit Miller Woods and draw pictures or take pictures and bring those back to add to the mural based on what they find on the field trip.

**Vocabulary:**

Community- an interacting population of various kinds of individuals (as species) in a common location

Food Chain- an arrangement of the organisms of an ecological community according to the order of predation in which each uses the next usually lower member as a food source

Explore- to search through / to go into or travel over for purposes of discovery or adventure / to examine carefully and in detail especially in order to make a diagnosis

Adaptation- adjustment to environmental conditions: as an adjustment of a sense organ to the degree or quality of stimulation / change in an organism or its parts that fits it better for the conditions of its environment / a structure resulting from this change

Habitat- the place or type of place where a plant or animal naturally or normally lives or grows

Metamorphosis- typically marked and more or less abrupt developmental change in the form or structure of an animal (as a butterfly or a frog) occurring subsequent to birth or hatching

**Indiana Content Standards:**

The Water World program can assist teachers in meeting the following Indiana standards

**Fifth Grade**

Science

Life Science

**SCI.5.3.1 2010**

Observe and classify common Indiana organisms as producers, consumers, decomposers, predator and prey based on their relationships and interactions with other organisms in their ecosystem.

**SCI.5.3.2 2010**

Investigate the action of different decomposers and compare their role in an ecosystem with that of producers and consumers.

**Sixth Grade**

Science

Life Science

**SCI.6.3.5 2010**

Describe how all animals, including humans, meet their energy needs by consuming other organisms, breaking down their structures, and using the materials to grow and function.

**SCI.6.3.6 2010**

Recognize that food provides the energy for the work that cells do and is a source of the molecular building blocks that can be incorporated into a cell’s structure or stored for later use.

High School

Earth Science

Earth Processes

**SCI.ES.6.2 2010**

Differentiate among the processes of weathering, erosion, transportation of materials, deposition and soil formation.

Atmosphere and Hydrosphere

**SCI.ES.4.2 2010**

Describe the relationships among evaporation, precipitation, ground water, surface water, and glacial systems in the water cycle. Discuss the effect of human interactions with the water cycle.

Biology

Matter Cycles and Energy Transfer

**SCI.B.3.4 2010**

Describe how matter cycles through an ecosystem by way of food chains and food webs and how organisms convert that matter into a variety of organic molecules to be used in part in their own cellular structures.

**SCI.B.3.5 2010**

Describe how energy from the sun flows through an ecosystem by way of food chains and food webs and how only a small portion of that energy is used by individual organisms while the majority is lost as heat.

Interdependence

**SCI.B.4.1 2010**

Explain that the amount of life environments can support is limited by the available energy, water, oxygen and minerals and by the ability of ecosystems to recycle the remains of dead organisms.

**SCI.B.4.2 2010**

Describe how human activities and natural phenomena can change the flow and of matter and energy in an ecosystem and how those changes impact other species.

**SCI.B.4.3 2010**

Describe the consequences of introducing non-native species into an ecosystem and identify the impact it may have on that ecosystem.

**SCI.B.4.4 2010**

Describe how climate, the pattern of matter and energy flow, the birth and death of new organisms, and the interaction between those organisms contribute to the long-term stability of an ecosystem**.**

**Extension or Follow-up Activity**

Class reflection paper or writing sample:

Ask each student to write a short essay, letter or story about what they learned on their field trip to Indiana Dunes National Lakeshore. Rangers love receiving mail from their students. Send the ranger the packet of essays from your class (or a copy of them), and your ranger will send your class a certificate from the dunes. Send your essays to:

Indiana Dunes National Lakeshore

1100 N. Mineral Springs Road

Porter, IN 46304

Attn: Your ranger’s name or just Education Department

If you are using this essay as a class assignment for a grade, we would like to suggest that each essay contain the following elements. Use the rubric below to score them.

\* The name of the park and the location of their field trip—for example: Douglas Center, Indiana Dunes National Lakeshore

\* Three facts they learned on the field trip about the habitats of the dunes.

\* A brief explanation of why Indiana Dunes is unique and therefore a national park.

\* At least two things the student can do to help take care of his or her national park.

\* Fill in the blank of this statement and provide an explanation:

I would like to learn more about \_\_\_\_\_\_\_\_\_\_ at Indiana Dunes.

\*\*\* For advanced groups, add the following element:

Tell the park rangers if you would like to bring your families and friends to the dunes and if so what would you do here and where would you go.

**Assessment:**

**Grading Scale for Class reflection writing assignment:**

1. **Writing and organization**- ***4 points*** the writing sample is very well written and organized by the elements provided. It has a strong introduction, middle and conclusion. ***3 points*** the writing sample is well written and organized by the elements provided. It includes an introduction, middle and conclusion. ***2 points*** the writing sample is choppy and is not well organized. It lacks an introduction or conclusion. ***1 point***the writing sample is very short and unorganized.
2. **Grammar & Spelling-** ***4 points*** Mistakes in spelling and grammar are minor or non-existent. ***3 points*** Mistakes in spelling and grammar are minimal—about 4-5. ***2 points*** mistakes in spelling and grammar are numerous—5-10. ***1 point*** mistakes in spelling and grammar are more than 10**.**
3. **Facts and content**- ***4 points*** the writing sample demonstrates the student’s learning on the dunes program and includes three or more facts provided by the park staff. ***3 points*** the writing sample demonstrates the student’s learning and includes only two facts provided by the park staff. ***2 points*** the writing sample does not demonstrate much learning and only includes one fact provided by the park staff.***1 point*** the writing sample does not demonstrate any learning and does not include any facts provided by the park staff.
4. **National Park Service theme** - ***4 points*** the writing sample clearly demonstrates the student’s understanding of the role of the NPS in preserving the dunes by explaining why Indiana Dunes is such a unique treasure.***3 points*** the writing sample mentions the NPS and its role in preserving the Indiana Dunes. ***2 points*** the writing sample mentions the NPS and Indiana Dunes. ***1 point*** the writing sample does not mention anything about the NPS or its role at Indiana Dunes**.**
5. **Stewardship-** ***4 points*** the writing sample lists three things the student can do to assist in taking care of the Indiana Dunes. ***3 points*** the writing sample lists two things the student can do to assist in taking care of the Indiana Dunes. ***2 points*** the writing sample lists one thing the student can do to assist in taking care of the Indiana Dunes. ***1 point*** the writing sample does not list anything about what the student can do to take care of the Indiana Dunes.