

EXPLORE

5 | Value of Wetlands

GRADE LEVEL

4-8

45 minutes



Developmental Modification: (K-3) Do the model as a demonstration and read the poem Value of a Wetland for class discussion and illustration. Use K-3 Journal Pages.

summary

Students participate in a demonstration of the values of a wetland and use poetry to discuss the significance of a wetland ecosystem.

subjects

Ecology

standards

This Great Lakes in My World activity is aligned to the Common Core State Standards and to state learning standards in:

Illinois
Indiana
Michigan
Minnesota
New York
Ohio
Pennsylvania
Wisconsin

This alignment is available on your Great Lakes in My World CD in the "Standards" folder and on-line at <http://www.greatlakes.org/GLIMWstandards>.

objectives

- Create a simple model of a wetland.
- Describe several values of a wetland.
- Discuss the importance of a wetland to the Great Lakes ecosystem.

prerequisite

Mud Painting, Alphabet Book, or Wetland Song

vocabulary

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

Filter: a substance with pores through which a gas or liquid is passed to separate out floating matter

Runoff: water from rain or snow that flows over the surface of the ground and finally into lakes and streams

materials

- Handful of soil
- Aluminum foil baking dish with a hole punched in one corner
- Pitcher of water
- Sponges (1 or 2- large enough to fill the baking pan)
- Tub to catch spilled water, if done indoors

setting

background

Wetlands hold runoff water and release it slowly into the soil, which prevents destruction from floods and saves water for future use. Wetlands function as a natural water filter. Sediment in the water settles to the bottom of a wetland, and the plants absorb pollutants in the water. In these ways, coastal wetlands act as a natural buffer for the Great Lakes. Wetlands provide habitat for many Great Lakes organisms as well as species that cannot live in the Great Lakes and prefer wetlands only, allowing for a high level of biodiversity in the Great Lakes and its watershed. Many Great Lakes fish swim into coastal wetlands to spawn; many insects spend the first part of their lives in wetlands; some species feed in both the wetlands and the Great Lakes.

Threats to Wetlands

Two-thirds of original Great Lakes coastal wetlands have been destroyed or degraded by filling and drainage for development, such as urban expansion and farmland and by dredging for commercial and recreational water traffic. Wetlands may be polluted by industrial and commercial operations, agricultural runoff, stormwater and other sources. Pollutants can include sediment, excess nutrients, trace metals, organic pollutants and grease, oil and salt from roads.

Wetlands on the Great Lakes are also susceptible to invasive species such as zebra mussels, purple loosestrife and phragmites. Shoreline wetlands are susceptible to introduced species because they are located in the shallow areas at the end of the creeks and rivers that flow into the Great Lakes and St. Lawrence River.

procedure

This activity may be done: 1) as a demonstration with volunteers, 2) in small groups with teacher direction, 3) as a student-directed experiment in which students are given some background and asked to design a model of wetland functions using the materials provided. This is written as a demonstration.

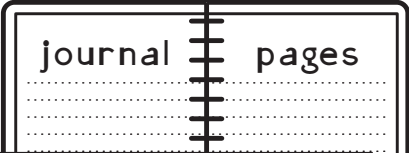
- Show students the aluminum pan with the sponges in it and tell them that it represents a wetland. Ask for a volunteer to hold the "wetland". Pour some water into the wetland and explain that it is raining. Watch how much water comes out of the hole in the pan (*not much*).
- Ask the students why the water didn't all come out of the pan. *The sponges, or wetland soil and plants, absorbed the water. Press gently on the sponges so that more water comes out of the pan. Explain that the wetland slowly releases water into the soil.*
- Take the sponges out of the pan. The wetland has been removed, and the pan now represents a parking lot, or another paved surface. Pour water into the pan again and watch as it all comes out of the hole. Ask students why this happened. *There was nothing to absorb the water. Ask students where this water will go. Into the lakes, streets, sewers, neighborhoods, etc. At this point, the water is no longer usable, as it is dirty from the streets.*
- Discuss the role of wetlands in holding water. What would happen if the runoff water all went into the city streets and the lakes? What impacts would this have on the lake? What impacts would this have on your neighborhoods? *Without wetlands to hold excess water, the lake and surrounding areas would flood.*
- Ask for a new volunteer to hold the wetland and one to add soil to the pitcher of water. Explain that this represents dirty water (which it is). After wringing out the sponges and returning them to the pan, pour the dirty water into the wetland. Watch the water that flows out of the pan and gently squeeze the sponges to release more water.
- Ask students what they observe. *The water leaving the pan is cleaner than the water in the pitcher. The soil is trapped in the wetland. Explain that the sponge catching the dirt represents sediment that settles to the bottom of a wetland and pollutants that are absorbed by plant roots.*
- How does a wetland's filtration ability impact water that re-enters the lakes from the wetlands? What would happen if the wetlands weren't there to filter water before it entered the lake? *Wetlands filter pollutants and excess nutrients from water. Without the wetlands, the lake would have a higher pollutant level.* Consider using other objects (coffee filter, strainer) as metaphors for the ways a wetland functions.
- Ask students what other values a wetland might have. What plants and animals might live in a wetland? *Answers might include: algae, lily pads, frogs, fish, birds.* Why do these organisms need a wetland instead of another habitat? *Wetlands provide a water source for at least part of the year, which is essential for organisms that spend all or part of their lives in the water. The water in wetlands creates special soil that allows wetland plants to grow.*

wrap-up

- Have a class discussion about the value of holding and filtering water, and wetland habitat. Are these things important? Why? Who uses this water? *Wetlands are valuable in that they prevent flooding of the lake and surrounding areas and they keep the lake water clean. The water that moves through wetlands is used by many plants and animals, and may also be used for human drinking water, depending on your local area.*
- Read "Value of Wetlands" poem and discuss the main points with students.
- Have students draw pictures in their journals to illustrate the points that were demonstrated. They should draw an example of a wetland, not a pan and sponges.

assessment

Rubric on page 246



GRADE LEVEL
4-8

5 | Value of Wetlands

FIRST NAME																				
LAST NAME																				

[1] Think about the activity with the sponge and the pan of water. Draw a diagram of a wetland that shows that it holds water like a sponge. Include plants and soil in your picture.

[2] Think about the activity with the dirty water. Draw a diagram of a wetland that shows how it filters water. Include sediment that falls to the bottom of a wetland and the roots of plants that absorb other pollutants.

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5 | Value of Wetlands

FIRST NAME																				
LAST NAME																				

Value of Wetlands

I go down to the wetland
For my favorite thing
The chorus of peepers
That sing in the spring.

Invertebrates hide
At the bottoms of weeds,
While red-winged blackbirds
Bounce in the tops of the reeds.

The species that live
In the wetlands make
The water cleaner
Before it flows to the lake.

The slider turtles
Bask on a log
After the morning
Has lifted the fog.

Nymphs swim underwater
Until they become
Dazzling dragonflies
That shine in the sun.

The wetlands are the
Great Lakes' key to survive;
The keepers of water,
The cradles of lives.

Heavy clouds drop
Their rain on the ground;
It pools in the ponds
That keep the water around.

The lake that is filled
With water so clean,
The fish that spawn,
And the birds that preen,

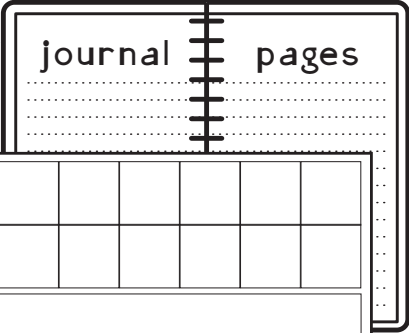
Author: Anne Richardson

Cattails still cling
To their seeds for good luck
And their roots reach deep,
Down into the muck.

Owe much to the wetlands,
The ponds, and streams,
The special places
Where freshwater gleams.

[3] Draw a diagram of a wetland. Include plants and animals (see poem) that would live in a wetland.

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GRADE LEVEL
K-3

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FIRST NAME																				
LAST NAME																				

[1] Fill in the blanks.

A wetland _____ water, preventing floods.

A wetland _____ water, making it clean.

A wetland provides _____ for plants and animals.

Word Bank: FILTERS HABITAT
 SPACE MUD
 EMPTYES HOLDS

[2] Draw a picture of a wetland that shows it is a home for plants and animals.

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