

# FishOn! Lesson Plan



## Wetlands - Nature's Filters

### Overview:

Students will participate in a class discussion about what a wetland is, what its functions are, and what types of wetlands can be found in their area. Students will then collect natural materials and create their own bio-filter, mimicking how wetlands filter pollutants out of water.

### Students will be able to:

- Define the characteristics and functions of wetlands.
- Describe how wetlands impact the surrounding ecosystems.
- Create a model of how wetlands function.

### Next Generation Science Standards

#### Practices

- Developing and Using Models

#### Core Ideas

- ESS2: Earth's Systems
- ESS3: Earth and Human Activity

#### Crosscutting Concepts

- Stability and Change
- Scale, Proportion, and Quantity

### To Prepare:

- Jars of turbid (cloudy) water - create by mixing soil into water
- Empty jars
- Coffee filters
- Large recyclable paper cups with a hole cut in the bottom
- Optional: food coloring, oil, or other substances to act as pollutants

After removing the bottom of the paper cups, place a coffee filter inside to hold the natural materials in while still allowing water to flow through.

### Procedure:

**Step 1:** A wetland is an area where the soil is covered by water either most of the year or during particular seasons. The water may seep up from the ground or come from a river, a lake, or the sea. Different classifications of wetlands exist around the country including bogs, swamps, marshes, and fens, all supporting unique plant and animal life. As a class, research which types of wetlands exist in your area and what flora and fauna they support. This activity can be extended by breaking the class into groups and assigning each group a classification of wetland to research before sharing findings with the class.



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**Think-Pair-Share:** What do wetlands do for the ecosystem?

As students share their answers, guide them with more questions if necessary.

Ex. Where do you think sand and road salt from the winter end up after the snow melts?

What about fertilizer or pesticides on plants after it rains?

Do animals rely on these areas? How? Do humans?

Important wetland functions include:

**Physical:** Flood control, protection from erosion, sediment traps, water storage

**Chemical:** Pollution filtration

**Biological:** Habitat, food sources, recreation, education

**Step 2:** Break the students into small groups and pass out materials to each group (1 prepared cup with coffee filter, 1 empty jar, 1 jar of turbid water).

Ask students to mix the water in their jar, making sure solids have not settled on the bottom. Have each group make observations about the water. What does it look like? Have you ever seen water that looks like this before? Where?

Introduce the word **turbidity** to the class. **Turbidity** is cloudiness in the water resulting from suspended particles like soil or pollutants. Turbidity is one measurement used to determine the quality of a water source. In general, less turbid water is healthier than extremely turbid water. The groups will be filtering the turbid water through their cups to determine which materials make the best natural filter to remove pollutants and other substances from water.



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**Step 3:** If your students have access to an outdoor area, explain that they will use natural materials of their choosing to try and create the best filter possible. Set boundaries for the students and give the groups a few minutes to collect the materials they think will make the best filter. If there is not access to an outdoor area, collect materials like pebbles, leaves, and grasses ahead of time for students to assemble.

Once students return, explain that they should fill their filtration cups roughly 3/4 full with the materials they collected. Each group will pour a little of their turbid water through the cup into their empty jar. Once all the water they poured has filtered into the jar, ask them to compare the filtered water to the water they started with. Is it less turbid?

Students may continue exploring by switching out the materials in their filters or by adding other “pollutants” such as food dye or oil to the turbid water. At the end of the experiment, have groups share what materials they used and how well their filter worked. Draw connections between this process and the way wetlands function as natural filters for pollutants and sediment.

Have students reflect on their learning by completing the **Wetlands** worksheet.





# Student Worksheet

## Wetlands - Nature's Filters Name: \_\_\_\_\_

What types of wetlands are located near you? Which plants and animals depend on these areas?

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List at least 3 physical, chemical, or biological functions of wetlands.

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Define the term “turbidity” and describe its importance in assessing water quality.

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What natural materials did your group use to create your filter? How effective were these materials at trapping pollutants in the water?

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**Bonus:** Did your group add additional pollutants to your turbid water, such as oil or food coloring? If so, how did those pollutants affect your filter?

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