

# Wonderful Wetlands



This activity center is part of the **Water Protection** theme.

## Purpose of this Activity:

Wetlands are wonderful species rich areas that provide habitat to multitudes of plants and animals while also providing many ecosystem services for humans. These ecosystem services include, but are not limited to, water retention and pollutant filtration. The purpose of the Wonderful Wetlands activity is to show how wetlands naturally filter and clean water and how the porosity of wetlands, in comparison to other natural materials, makes wetlands so wonderful! By the end of the activity students will understand how the porosity of materials allows them to retain water, and how wetlands clean water.

## Key Messages:

- Understand the importance of wetlands with regards to habitat for animals.
- Understand that wetlands help retain water due to their natural porosity which can mitigate the effects of drought and flooding.
- Understand that wetlands have the ability to clean water by filtering pollutants from water.

## Materials:

- Paint Trays
- Clay
- Sponges
- Water
- Measuring Cups
- Watering Can
- Toy houses/building

## What Will I be doing?

### Set Up:

Paint Trays which represent our “landscape” must be empty and ready for the group. Clay and sponges should be in their respective bins. There should be two bins for water, a clean and dirty one.

### Minds on:

**Q:** What happens when it rains and rains and rains?! (Pair and share)

**A:** (May vary) puddles form, flooding, lakes and streams get bigger/wider... etc.

**Tell:** That’s right when it rains more water goes into our lakes and rivers or runs off on surfaces that are impermeable or not porous.

**Q:** What does impermeable mean?

**A:** It is something that water cannot get through.  
(Have kids repeat the word potentially)

**Q:** What is porosity? Or being porous?

**A:** Porosity is the space within a material that can hold water or other liquids. They’re like little holes we can’t always see that can hold water.

-Show students a sponge and a rock.

**Q:** Which material is more porous which means is able to hold water?

**A:** Sponge! (Show the porosity by putting sponge into water and squeezing it out. Compare that action to a rock/clay being dipped in water and squeezed) (Can have

students inspect the sponge and rock for holes which is a measure of porosity).

**Tell:** Permeability of materials is related to the porosity of the material. That means how much space is within the material that can hold water. So if something is not very porous it means it is not able to hold very much water and is impermeable. If something is very porous it is a permeable surface.

- Have students give you examples of impermeable surfaces

**Q:** What kinds of surfaces or materials are permeable or highly porous? Meaning they let water get through easily? (Pair and share)

**A:** Soil, wood, plants, sponges etc.

**Tell:** An example of a very porous or permeable natural feature that is part of the landscape is Wetlands!

-Present to students from the posters set up in the booth a variety of key features of different types of wetlands and explain the key animals and plants that live there.

### **Hands On:**

**Tell:** So now that we know a little bit about impermeable and permeable surfaces and their relation to porosity lets experiment!

- Hand out painting trays and explain that this is a little landscape (an eagle's eye view of it). The bottom of the tray is a beautiful lake that lots of people like to build their houses around.

-Give kids two materials, clay and sponges and explain what each material represents, a paved parking lot, and a wetland.

-Demo placing one of the materials at the top of the paint tray and making it rain by pouring a measured amount of water from the watering can. Explain that the water from the watering can is rain, and when it rains these different surfaces react with the water by either absorbing it or having the water run-off.

-Kids can experiment trying the clay and the sponges, for a few minutes.

Ask students what happened when they used clay or sponges.

Have kids empty the water from their trays.

**Tell:** We tried this using only clean water, what will you think will happen if we use, dirty or polluted water?

**Students:** Pair and share, then discuss as a group

- Have kids experiment for a few minutes using clean and dirty water to see how other materials react to these different types of water.

- Take up and talk about how impermeable surfaces like cement which is represented by clay causes a lot of water to run-off and it does not absorb any water.

**Q:** What would happen to the house and lake below if it rained and rained and no water is absorbed by this impermeable surface?

**A:** The lake would get bigger and bigger and flood the houses.

-Follow with the other materials and discussing what would happen with clean and dirty water.

-When using the sponge or "wetland"

**Q:** What material was able to clean dirty water?

**A:** Sponges/Wetlands. This is because plants are able to filter the water.

### **Consolidation Questions for Students**

**Q:** Which type of surface material worked best for retaining and absorbing water in your landscape? (Non-porous material/clay or highly porous material/wetlands)

**A:** The best material was wetland because it was very porous and therefore very permeable and was able to hold a lot of water.

**Q:** So wetlands can hold lots of water, why is that helpful? (Might need students to pair and share) Help them think by mentioning what would happen to houses if the water isn't stopped?

**A:** They are able to hold or absorb a lot of water after a heavy rainfall which can stop flooding from happening. If it hasn't rained a lot they help buffer effects of drought conditions because they can retain water even when it's dry out.

**Q:** Is dirty or polluted water bad? Why?

**A:** Yes, it can make wildlife sick, it can make us sick, and it can kill the plants.

**Q:** How does dirty or polluted water affect fish?

**A:** Fish may not be able to breathe because dirt and pollutants may clog gills and lead to death.

**Q:** Why are wetlands so important?

**A:** They retain water or absorb water because they are porous. This can buffer the effects of drought and flooding on the surrounding landscape. They are also able to filter the water of pollutants which keep the water clean for plants and animals that live in wetlands.

**Background:**

Wetland: Is an area where water has saturated the soil. This could mean it either covers the soil or is present near the surface of the soil. The water may be present permanently or it may only be present seasonally, often during the spring or growing seasons. Wetlands are considered to be the most species rich ecosystems in the world.

Riparian zones: These are wetland areas that are present along the banks or shorelines of lakes, rivers and streams. They are important to water bodies because as a wetland they are able to buffer the effects of flooding, drought and pollutant run-off. This in turn helps protect the wildlife in the lakes and residence living along shorelines.

**Clean Up Procedures:**

Dump all water from the experiments into the dirty water container. If there is a suitable location to pour the water out it should go on some vegetation as there is a lot of sediment within the water. Take all materials on paint trays and put them back in their respective containers.