

Wetlands Station

As a group, walk the students to the identified wetlands area. The pathway will be flagged along the river and into the wetlands. The wetland will have identifying marker flags. Have students stand in the general proximity of the wetlands, but remind them keep their impact on the area as minimal as possible. In other words, encourage them not to trample down plants or flagged indicators within the wetlands area.

Setting the Stage:

What is a wetland? Wetlands are exactly that - "wet lands" - where there is standing water on the ground for at least part of the year. Wetland soils are either full of water or under water, and the plants that live there are adapted to growing in very wet conditions. You can find wetlands along the edges of rivers, streams, lakes or ponds, and between dry land and deep water .

Students should understand that the wetlands perform many important functions including providing food and shelter for wildlife and nesting and resting areas for migratory birds. Wetlands vegetation is also highly beneficial providing such benefits as: absorbing nutrients, natural filtering system, flood and erosion protection and cycling nutrients.

Activity:

The Wetlands Station leader will introduce students to wetland functions through the "WOW! The Wonders of Wetlands Metaphors" activity. In this activity, students will learn about **metaphors**, which is an object or phrase that represents a concept or idea. The metaphors in this activity are common objects that represent some of the many benefits wetlands provide through the way they function, or work. These "benefits" are what is meant when we say that wetlands have "value". Wetlands function in many ways that provide benefits or value to the humans, plants and animals that live within them.

Wetland Metaphors:

- SPONGE - Absorbs excess water caused by runoff; retains moisture for a time during droughts even if standing water has dried up (sponge stays wet even after it has absorbed a spill)
- PILLOW - A resting place for migratory birds
- EGG BEATER - Mixes nutrients and oxygen in the water
- BABY'S BOTTLE - Provides a nursery that shelters, protects, and feeds young wildlife
- STRAINER- Strains silt and debris from water (keeps water supply clean)
- COFFEE FILTER - Filters smaller impurities from water (excess nutrients, toxins)
- ANTACID - Neutralizes toxic substances
- RICE BOX - Provides nutrient-rich foods for wildlife and humans
- SOAP - Helps cleanse the environment
- WETLAND ANIMAL PICTURE - Habitat for diverse wildlife

The station leader will take each of the above items from the tub, one at a time, and ask students what wetland function the item represents.

This activity is simply an introduction and should be completed in **about 5 minutes**.

Wetlands Scavenger Hunt:

The first step in studying wetlands is to explore and observe one. Discuss the main indicators of wetlands: hydrology, soils and vegetation. Wetlands are areas that are covered by water or have waterlogged soils for long periods during the growing season. We call these hydric soils. Plants growing in wetlands are capable of living in saturated soil conditions for at least part of the growing season.

Some wetlands such as swamps and marshes are often obvious, but others are not easily recognized because they are dry during part of the year. Some of these wetland types include, but are not limited to, many bottomland forests, pocosins, pine savannahs, bogs, wet meadows, potholes, and wet tundra. Our wetland is Palustrine Forested Temporarily Flooded wetland. Our wetland is predominated by trees. Water ponds in small spots or resides just below ground level. You can point out the wet conditions of our wetland, the gleyed soils (soil should be pre-augered to display the soil profile), the reduced conditions, and plants that like wet conditions (one site will have several plant indicators, while the other site will not be as obvious).

Wooded wetlands provide important habitat for many types of plants and animals. White-tailed deer use dense wetland environments for winter cover. An abundant supply of winter food is critical for white-tail survival, and swamp vegetation such as red maple, dogwood, and cedar forms an important part of the deer diet. Other animals that use swamps for food or cover include hawks and owls, rabbits and hares, raccoons, coyotes and wolves, black bears and a variety of songbirds. Wood ducks often nest in hollow trees in open swamps. Many songbirds nest in these wetlands and feed on the berries and seeds that are abundant in the fall.

Activity:

Each group of 5 students will be provided with a two-sided, color Wetlands Scavenger Hunt observation sheet – 1 laminated sheet and dry erase marker for each group of 5 students. Have the students use the Wetland Scavenger Hunt observation sheet as a starting point in their discovery. Most of the indicators and adaptations will be flagged and numbered in the wetland. While on their scavenger hunt, students will try to match the numbered flags with the indicators on their sheet. They can write the number of the indicator on their sheet using the dry erase marker.

This activity should take **15 minutes**.

Follow-up (last 5-10 minutes):

After the students have finished their scavenger hunt, gather them back together to share what they saw and heard. You may walk them around the wetland area and discuss the observations and why each indicator or adaptation is important.

Discuss the threats to wetlands. In many areas, wetlands are being pushed past their tolerance limit and are being destroyed. Natural catastrophes such as excessive flooding and drought can cause temporary setbacks, but these natural events are actually critical to the long-term survival of some wetlands. In fact, people are the single biggest cause of the destruction of wetlands. Draining, filling, dredging, polluting and the introduction of exotic, or non-native species are all major threats.

Follow –up Questions:

Encourage students to fill out their data card questions.

What is a wetland?

List three benefits of wetland?

- 1.
- 2.
- 3.

List three wetland indicators?

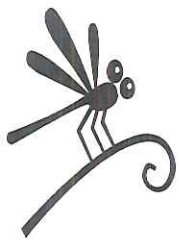
- 1.
- 2.
- 3.

Describe the color of our wetland soil?

Name 3 types of animals that would make this wetland its home.

- 1.
- 2.
- 3.








What is the single biggest cause of the destruction of wetlands?



Wetland Scavenger Hunt Hydrology Indicators



Simply put, “hydrology” is the study of water. So, “wetland hydrology” is the study of how water behaves in a wetland. All wetlands must have water at or near the ground surface for a certain length of time during the growing season. But, since water may not always be visible, sometimes we need to look for other signs that water has been there. When water is present for a significant amount of time it leaves behind signs. These signs are called “wetland hydrology indicators”. Can you find any of the following indicators of wetland hydrology?

Photo	Indicator Name and Description	Check Box
	<p>Surface Water, Inundation, or Ponding – Water is present above the soil surface. Use with caution since this may also occur in non-wetland areas immediately after a rainfall event.</p>	
	<p>Saturation – Water is present within 12 inches of the soil surface. This can be determined by looking at a soil sample and squeezing it to see if water comes out or observing water glistening on the surface of the sample. Sometimes, saturation can be determined when you step on the ground and water “squishes” out.</p>	
	<p>High Water Table – Observation of water within 12 inches of the soil surface in a soil pit, auger hole, or shallow monitoring well. Sufficient time must be allowed for water to flow into a newly dug hole and for the water level to stabilize.</p>	
	<p>Drift Lines – Accumulated debris that has been deposited on the ground surface, tangled in vegetation, or caught by other fixed objects. Debris usually consists of the remains of vegetation (branches, stems, and leaves), sediment, and litter.</p>	
	<p>Water-Stained Leaves – Dead leaves on the soil surface that have decayed and turned grayish or black in color due to inundation for long periods.</p>	
	<p>Drainage Patterns – Flow patterns visible on the ground surface, eroded into the soil, or created through vegetation. Sometimes indicated by absence of leaf litter or small woody debris due to flowing water or similar evidence that water flowed across the ground surface.</p>	
	<p>Iron Deposits – A thin orange or yellow crust or gel of oxidized iron on the soil surface or on objects near the surface. Iron deposits are often oily-looking with a rainbow-like effect.</p>	



Wetland Plants –Plants growing in wetlands are capable of living in saturated soil conditions for at least part of the growing season. We call plants that almost always occur in wetlands as obligate species and those that usually occur in wetlands as Facultative Wetland Species. Sycamores and River Birch are examples of Facultative Wet tree species.



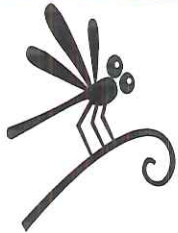
Sphagnum Moss – Also called peat moss, these are specialized group of mosses that have high moisture requirements. They are typically found along the margins of ponds and pools, in swales or roadside ditches, and in forested wetland depressions or swamps.



Aquatic Fauna – Presence of live or dead individuals or evidence of aquatic fauna such as tadpoles, aquatic snails, aquatic insects, crayfish or other crustaceans, fish, etc. This includes evidence such snail shells, dragonfly nymph exoskeletons, skins or skeletons of amphibians or fish, etc.






Crayfish Burrows – Also called crayfish chimneys, these are openings in soft ground, up to 2 inches in diameter, which are often surrounded by a mound of excavated mud. Crayfish are aquatic crustaceans that require periodic contact with water.



Wetland Scavenger Hunt Plant Adaptations



Many wetland plants, also called **hydrophytes**, have developed specialized “adaptations” to help them survive in such a wet environment. “Wetland plant adaptations” are changes to the structure and/or functions of the plants, most often to help support them in wet soils. In some cases the adaptations help the plants “breathe” in the wetland environment where oxygen isn’t as abundant. Can you find any of the following wetland vegetation adaptations?

Photo	Adaptation Name and Description	Check Box
	Buttressed Trunk – Some tree species, like the Bald Cypress shown here, may develop enlarged trunks in response to frequent <u>inundation</u> .	
	Fluted Trunk – Some wetland trees have flared bases, probably to provide support in wet, unstable soils.	
	Shallow Root System – When soils are <u>inundated</u> or <u>saturated</u> for long periods during the growing season, there is little oxygen available for plants and trees. To survive, trees and plants develop shallow root systems so that they can breathe. In forested wetlands, wind-thrown trees often indicate shallow root systems.	