



ACTIVITY GUIDE FOR VIRTUALLY WILD! COMMUNITIES

Wonders of the Wetlands
Anahuac National Wildlife Refuge

So you watched a *Virtually Wild! Communities* video with your class. Now what? There's a lot to unpack, but worry not. We have a few activities to get you started.

Themes from Anahuac National Wildlife Refuge:

- Wetlands
 - Environmental services
 - Water quality
 - Air quality
 - Hurricanes / Flood mitigation
- Animals
 - Food web
 - Biodiversity
 - Adaptations
 - Taxonomy
- Ecosystems
 - Benefits
 - Biotic and abiotic elements
 - Niches
 - How to measure ecosystem health
 - Changing landscapes

Resources:

- [Water quality test kits](#)
- [Anahuac NWR Website](#)
- [HERE in Houston Website](#)
 - “How To Build a Wetland Model” like Ranger Stephanie’s from the video
 - [Overview of Coastal Marshes](#)

Activity Guide for Virtually Wild! Communities

What is a Wetland?

Activity # 1		Time Required: 30 mins
Wetland Services		
Lesson Developers: Emma Wilson, Alicia Mein-Johnson, Anahuac National Wildlife Refuge		Materials: -Wetland Model Kit (From DIY guide) or video -pitcher of water -dirt and leaf debris
Objectives:		Grade Level - TEKS
<ul style="list-style-type: none"> ❖ Describe a wetland. ❖ Identify environmental services provided by wetlands. ❖ Recognize and demonstrate the effects of erosion. 		K-2 – 1-4 3-5 – 1-4, 7, 8, 9 6 – 1-4, 12 7 – 1-4, 8 8 – 1-4, 11
Procedures		
Time	Activities	
5 min	I. Motivation/Warm Up -Set up beforehand the wetland model or queue video to the wetland demonstration. -Show students your wetland model and introduce the theme. Ask students which they hypothesize will slow down water and debris more efficiently, a smooth, cleared surface or one covered with vegetation.	
15	II. Information -Define Wetland in terms of properties, geographic location, & biodiversity. -Describe plants & animals in this habitat and the environmental services (filters, slows, and absorbs water; acts as a buffer between fresh and saltwater). -Why we care: affects water quality, lessens inland hurricane damage, lessens erosion, high biodiversity.	
10	III. Practice -Put a smooth layer of soil (~1/4 inch thick) on both sides of a wetland model. Cover one side with ‘vegetation’. Pour water on both sides to compare effects of wetland/concrete on sediments and to model erosion. -Mix soil and debris in cups. Pour on both sides of the model to compare effects of wetland/concrete on filtration and buffer abilities.	
	IV. Application Encourage students to look at paved vs natural settings near their home. Discuss ways to mitigate negative effects of bare terrain (planting vegetation for flood mitigation, creating reserves, using permeable paving, etc.)	
	V. Modifications Older students can change variables in the model and measure the effects. Younger students can do one demonstration at a time.	

Activity Guide for Virtually Wild: Communities

What is a Wetland?

Activity # 2 Measuring Sediment		Time Required: 30 mins
Lesson Developers: Emma Wilson, Alicia Mein-Johnson, Anahuac National Wildlife Refuge		Materials: Graduated cylinders Permanent marker Soil with mixed components Water
Objective(s): ❖ Measure amounts of sediment and quantify the turbidity of filtered vs unfiltered water		Grade Level - TEKS K-2 – 1-4, 7 3-5 – 1-4, 7, 8 6 – 1-4, 12 7 – 1-4, 8, 13 8 – 1-4, 11
Procedures		
Time	Activities	
5 min	I. Motivation/Warm Up - Introduce the theme. Ask students which they hypothesize will slow down water and debris more efficiently, a smooth, cleared surface or one covered with vegetation.	
15	II. Information -Define terms: turbidity, sediment, etc that relate to water quality. -Explain experiment: show equipment and explain how to measure turbidity and sediment levels -Why we care: safe drinking water, measure health of ecosystems, recording water quality over time, after disasters, etc.	
10	III. Practice -Combine water and soil for dirty water. -Draw an “X” with a marker on the bottom of a graduated cylinder. -Fill cylinder with dirty water until X is no longer visible. Measure the volume. -Repeat with a sample of filtered water and graph/compare the volumes. -Let sample sit for a few hours/overnight. Measure the amount of sediment settled on the bottom of the cylinder, graph/compare the volumes.	
	IV. Application -Compare water quality at an urban site with ample concrete, to a more natural site with ample vegetation. Can use filtered water as the control/comparison. Students brainstorm ways to increase vegetation in the neighborhoods to decrease sediments in the water systems.	
Modifications For older students, identify the parts of soil in the settled mixture: measure sand (10-12 seconds to settle), silt (30 seconds-one minute to settle), and clay (an hour-overnight to settle). Use a Soil Triangle Diagram to determine the type of soil. Compare your turbidity rates to those in Galveston Bay using the GBF Report Card (published annually). For younger students, just hold two cylinders up to see which one is the most cloudy/dirty.		

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What is a Wetland?

Activity # 3		Time Required: 30 mins
Wonders of the Wetland		
Lesson Developers: Emma Wilson, Alicia Mein-Johnson, Anahuac National Wildlife Refuge		Materials: -Jars/Baggies to collect animals -Gloves
Objective(s): ❖ Learn about animals' unique adaptations to their ecosystem. ❖ Explore local habitat and collect animals/insects		TEKS K-2 – 1-4, 8, 9, 10 3-5 – 1-4, 8, 9, 10 6 – 1-4, 12 7 – 1-4, 10, 11b, 12a, 14b 8 – 1-4, 11
Procedures		
Time	Activities	
10 min	I. Motivation/Warm Up -Watch one of Ranger Jessica's animal interviews	
15	II. Information -Discuss animal adaptations to their habitats, such as camouflage, defensive instincts/colors, physical adaptations to live on land vs water. -Identify key species in an ecosystem. -Discuss why it's important to protect vulnerable habitat.	
10	III. Practice -have students choose a local animal -use iNaturalist or Texas Parks & Wildlife Department websites to research animal adaptations and locate nearby sightings -students discuss local perils facing the animal (habitat fragmentation, poor water quality)	
30	IV. Application -Go outside on a scavenger hunt using iNaturalist (ages 13+) or Seek by iNaturalist (age <13). Find animals and plants on your campus, and brainstorm ways to increase biodiversity. Build a birdhouse or scatter wildflower seeds to attract more animals, and monitor your species count based on different variables, like seasons, weather, or time of day.	
	V. Modifications Older students make a dichotomous key to differentiate their animal from others in the ecosystem. Identify the classification/taxonomy. Younger students identify the stages in the life cycle of their insects.	