

WETLAND WONDERS

(August — October, April, and May)

Wetlands are unique habitats, distinguished by specific plant and animal life, soil types, and drainage patterns. An urban wetland is a gem to explore. Students will put on boots to wade in Murfree Spring, peer through microscopes to see the “unseen world” of pond water, and experience up-close encounters with Discovery Center wetland animals.

5th GRADE

Standards:

Science

Language Arts

Social Studies

Life Science

Standard 2. INTERDEPENDENCE:

Conceptual Strand 2: All life is interdependent and interacts with the environment.

GLE 0507.2.1. Investigate different nutritional relationships among organisms in an ecosystem.

Teacher Questions, Pre-Tour

Q: What are some things we eat for lunch? List meats and their sources (hamburger = cow, etc.), plants and their sources (vegetable soup = tomatoes, carrots, onions, etc.). If you identified the meat, what did that animal eat? (hamburger = cows, eat grass/hay/corn). So, what is the source of all of our nutrition? (Plants, which make their own food from the SUN.)

Teacher Questions, Post-Tour

Q: In a wetland ecosystem like that at the Discovery Center, can you trace some of the nutritional relationships, starting with the sun for the following species (research may be required for some of these): a cattail plant; an otter; a dragonfly; a great blue heron.

GLE 0507.2.2. Explain how organisms interact through symbiotic, commensal, and parasitic relationships.

Teacher Questions, Pre-Tour

Q: Define symbiotic, commensal, and parasitic. Give examples of each.

Teacher Questions, Post-Tour

Q: Based on wetland plants and animals and their relationships, such as those found at the Discovery Center wetlands, describe the relationships between the following species and explain why their relationship fits the description you chose:

1. Ticks and raccoons

2. Spider homes and plants
3. Bees and wildflowers

GLE 0507.2.3. Establish the connections between human activities and natural disasters and their impact on the environment.

Teacher Questions, Pre-Tour

Q: The term ‘natural’ disaster indicates that humans do not cause natural disasters. But some things that humans have done and continue to do can affect the impact of a natural disaster. For instance, if a lightning strike causes a fire, if humans have built homes too close together and out of flammable materials, a fire can spread quickly and destroy many homes, possessions, and possibly lives.

Can you give an example where human activity could make a natural disaster better or worse? (Floods, tsunamis, heavy rainfall, earthquakes, volcanic eruptions, etc.)

Teacher Questions, Post-Tour

Q: How can wetlands help prevent flooding? (Wetlands function like big sponges, slowing down and absorbing excess water during storms.) How can wetlands improve water quality for an area? (Wetlands improve water quality by filtering out pollutants, like sediment and nutrients, before they reach the river.)

Standard 3. FLOW OF MATTER AND ENERGY:

Conceptual Strand 3: Matter and energy flow through the biosphere.

GLE 0507.3.1. Demonstrate how all living things rely on the process of photosynthesis to obtain energy.

Teacher Questions, Pre-Tour

Q: Do we make our own food? (No).

Q: What organism CAN make its own food? (Only green plants)

Q: How does a green plant make its own food? Uses sunlight, carbon dioxide from the air, and water in its ‘food factory’ ---leaf cells --- to produce sugar (food) and oxygen, which it releases into the atmosphere. (<http://photosynthesisforkids.com/>)

Teacher Questions, Post-Tour

Q: Name some of the animals you saw on your Discovery Center tour. What does each one eat, and how does that animal depend on photosynthesis?

Standard 4. HEREDITY:

Conceptual Strand 4: Plants and animals reproduce and transmit hereditary information between generations.

GLE 0507.4.2. Recognize that some characteristics are inherited while others result from interactions with the environment.

Teacher Questions, Pre-Tour

Q: What characteristics might you inherit from your parents? (Skin, eye, hair color, ‘handedness,’ ability to twirl tongue, attached/nonattached earlobes, height, freckles, etc.) What characteristics might you develop due to your environment? (Physical ability, mental, spiritual, social traits). Can you list some of these? (<http://www.gurusoftware.com/GuruNet/Personal/Factors.htm>)

Teacher Questions, Post-Tour

Q: Think of an animal that you met at the Discovery Center. What characteristics did it inherit from its parents? Are there any characteristics that result from interactions with its environment? Write down some you think of? Would these be true of this animal alone, or of all animals of its species? Why or why not?

Standard 5. BIODIVERSITY AND CHANGE:

Conceptual Strand 5: A rich variety of complex organisms have developed in response to a continually changing environment.

GLE 0507.5.1. Investigate physical characteristics associated with different groups of animals.

Teacher Questions, Pre-Tour

Q: Define mammal, reptile, amphibian, bird. Give examples of each.

Teacher Questions, Post-Tour

Q: On your visit to the Discovery Center, you met several types of animals. Tell which family each of the following belongs to, and what physical characteristics prove it:

1. turtle
2. ferret
3. salamander
4. lizard
5. snake
6. rabbit

GLE 0507.5.2. Analyze fossils to demonstrate the connection between organisms and environments that existed in the past and those that currently exist.

Teacher Questions, Pre-Tour

Q: Are fossils real? Are they living or nonliving? What would you say to someone who told you, “A fossil is just a rock”?

Teacher Questions, Post-Tour

Q: During our trip to the Discovery Center, you were able to investigate some real Tennessee fossils. Could you distinguish animals from plants? What about “Indian money” (crinoids stems)? These plant stem pieces resemble an animal’s vertebrae.) Did you see anything that reminded you of a present-day plant or animal? What conclusions could you draw from your observations?

Recommended Reading:

Nonfiction:

City Animals (Zoobooks Series) by John Bonnett Wexo.

Ducks, Geese, & Swans (Zoobook Series) by John Bonnett Wexo

Nocturnal Animals (Zoobooks Series) by John Bonnett Wexo. (Grades 4 and up)

Owls (Zoobooks Series) by Timothy L. Biel. (Grades 4 and up)

Salamander Rain: A Lake & Pond Journal by Kristin Joy Pratt-Serafini. (Grades 3 and 4).

Skunks and Their Relatives (Zoobooks) by John Bonnett Wexo. (Grades 4 and up)

Turtles (Zoobooks Series) by Timothy L. Biel. (Grades 4 and up)

Snakes! (Zoobook Series) by John Bonnett Wexo. (2001).

Snakes! Strange and Wonderful by Laurence Pringle. (2009). Elementary.

Fiction:

(Hybrid: fiction and nonfiction) Near One Cattail: Turtles, Logs And Leaping Frogs by Anthony D. Fredericks. (Ages 4 and up)

The Magic School Bus Gets Eaten: A Book About Food Chains by Pat Relf. (Ages 4 and up, 32 pages).

Talking Earth, The by Jean Craighead George. (1987), (Ages 8 and up) Lexile Measure: **770L**

For teachers:

Ranger Rick's NatureScope series titles:

Amazing Mammals, Part I (1998, National Wildlife Federation, McGraw-Hill)

Amazing Mammals, Part II (1998, National Wildlife Federation, McGraw-Hill)

Endangered Animals: Wild and Rare (1997, National Wildlife Federation, McGraw-Hill)

Let's Hear It for Herps (1997, National Wildlife Federation, McGraw-Hill)

Wading Into Wetlands (1997, National Wildlife Federation, McGraw-Hill)

Social Studies

Standard 3. GEOGRAPHY:

Content Standard 3.0: Geography enables the students to see, understand and appreciate the web of relationships between people, places, and environments. Students will use the knowledge, skills, and understanding of concepts within the six essential elements of geography: world in spatial form, places and regions, physical systems, human systems, environment and society, and the issues of geography.

GLE 5.3.02 Recognize the interaction between human and physical systems around the world.

Teacher Questions, Pre-Tour

Q: Where does the water in your house come from? (the city? The county? A well?) Where do you think the water in a wetland comes from? Why is clean water important?

Teacher Questions, Post-Tour

Q: The spring that creates the wetland at the Discovery Center provides water and a home for many plants and animals. Describe the ecosystem of a wetland as a *habitat* and the species that live there in terms of *food chains and food webs* that exist in a wetland. [Hint: This can be done through art, a model, or other learning strategy.]

Standard 6. INDIVIDUALS, GROUPS, and INTERACTIONS:

Content Standard 6.0: Personal development and identity are shaped by factors including culture, groups, and institutions. Central to this development are exploration, identification, and analysis of how individuals and groups work independently and cooperatively.

GLE 5.6.01. Recognize the impact of individual and group decisions on citizens and communities in a democratic republic.

Teacher Questions, Pre-Tour

Q: How are changes made at your school? (for example, if you wanted different types of food in the cafeteria?) How are changes made in your city/county? In your country? In the world?

Teacher Questions, Post-Tour

Q: The wetlands and the Discovery Center building and property used to be owned by a bottling company. How do you think the changes were made for this property to be used for a museum and the wetlands preserved so that you could visit with your classmates or families? What do you think the impact of having a family museum has been on Murfreesboro and the surrounding communities? (Many school groups visit the museum each year, not only from Rutherford County and the City of Murfreesboro, but from surrounding counties, including Davidson. In addition, the museum hosts special events for the community, and is the facility for many events for special groups.)