

Enrichment Activities-

Ruffner Mountain Nature Preserve

Ruffner Mountain Nature Preserve is more than 1,000 acres of undeveloped land in Jefferson County. Visitors can see diverse native plants and wildlife. The many hiking trails offer many opportunities to learn about Alabama's geological history and to enjoy glorious views. Students who visit will learn about biodiversity, the history of Birmingham's mining industry, and how to care for precious natural resources

The most successful field trips visits where students have been prepared for their visit and are challenged to reflect on the visit after they return to the classroom. Below you will find activities that can be completed before or after your visit. These plans can be used across grade levels, but specific Alabama Course of Study objectives are listed for each plan.

1. Animal Adaptations
2. Wonderful Wetlands
3. Tree Rubbings
4. Making Coal
5. Making Fossils

A visit to Ruffner Mountain Nature Preserve meets the following objectives from the Alabama Course of Study:

Kindergarten:

Science:

- Compare size, shape, structure, and basic needs of living things.

LESSON: Animal Adaptations

- Identify features of Earth as landmasses or bodies of water

LESSON Wonderful Wetlands

First Grade:**Science:**

- Identify features of Earth as landmasses or bodies of water

LESSON: Wonderful Wetlands

- Describe survival traits of living things, including color, shape, size, texture, and covering.

LESSON: Animal Adaptations

- Identify components of Earth's surface, including soil, rocks, and water.

LESSON: Making Coal

Second Grade:**Social Studies:**

- Identify geological features as mountains, valleys, plains, deserts, lakes, rivers, and oceans

LESSON: Wonderful Wetlands

Third Grade:**Science:**

- Determine habitat conditions that support plant growth and survival.

LESSON: Wonderful Wetlands

- Describe ways to sustain natural resources, including recycling, reusing, conserving, and protecting the environment.

LESSON: Wonderful Wetlands

LESSON: Tree Rubbings

- Describe how fossils provide evidence of prehistoric plant life.

LESSON: Making Fossils

Fourth Grade**Science:**

- Describe the interdependence of plants and animals.

LESSON: Wonderful Wetlands

LESSON: Tree Rubbings

- Describe the relationship of populations within a habitat to various communities and ecosystems

- LESSON: Wonderful Wetlands



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Animal Adaptations

This activity can be used with any age group, but it specifically relates to the following Alabama Course of Study objectives:

- Kindergarten Science:
 - Compare size, shape, structure, and basic needs of living things.
- First Grade Science:
 - Describe survival traits of living things, including color, shape, size, texture, and covering.

Students will encounter many insects while on their visit. This is especially true if students attend Ruffner’s “Crazy for Creepy Crawlies” program for K-4. This lesson is designed to give children the chance to learn about native insects and to represent what they have learned.

What You Will Need:

- Resources for research (books, magazines, approved websites)
- Pictures of insects native to Alabama – see <http://www.encyclopediaofalabama.org/face/Article.jsp?id=h-1809> or other websites for information
- Materials for students to use to represent their learning (paper, poster paper, construction paper, markers, etc.)

Insects that are native to Alabama include, but are not limited to: mayfly, monarch butterfly, earwig, Southeastern field cricket. Compile a list of insects that children are likely to see in their environment and/or at the Ruffner Mountain Nature Preserve.

Children can work in groups or individually, and you can let them choose or assign them an insect to research. Have the children find information about the size, shape, and structure of the insect. Have them find or make predictions about how the color, shape, size, texture, or covering might help to keep the insect safe from predators.

Have students draw pictures of their insects and label their body parts as well as the parts that help the insect survive.



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Wonderful Wetlands

This activity can be used with any age group, but it specifically relates to the following Alabama Course of Study objectives:

- Kindergarten Science:
 - Identify features of Earth as landmasses or bodies of water.
- First Grade Science:
 - Identify features of Earth as landmasses or bodies of water.
- Second Grade Science:
 - Identify geological features as mountains, valleys, plains, deserts, lakes, rivers, and oceans
- Third Grade Science:
 - Determine habitat conditions that support plant growth and survival. Examples: deserts support cacti, wetlands support ferns and mosses
 - Describe ways to sustain natural resources, including recycling, reusing, conserving, and protecting the environment.
- Fourth Grade Science:
 - Describe the interdependence of plants and animals.
 - Describe the relationship of populations within a habitat to various communities and ecosystems

This lesson will show how pollution from different sources affects animals in their habitats (particularly a wetland).

What You Will Need:

- Very large poster or tarp with a picture of a river that goes past the following: a construction site, a housing development, a bridge, a park, another housing development, a foot path, a landfill
- a household sponge with a tadpole shape cut out of the center
- A fishbowl and water
- a plastic tadpole (to use to move along the “river” on the poster
- Small plastic zip bags containing the following items: brown sugar, green sprinkles, syrup, salt, a piece of torn up paper, dish soap, smashed chocolate sandwich cookies, red dye
- a strainer

Place the tadpole sponge in the fish bowl and fill it with 4 inches of water

Put the plastic tadpole at the beginning of the diagram as a game piece.

Place the bags of varying materials next to the pictures of places on the river picture. They should be in this order:

- brown sugar with construction site
- green sprinkles with the first housing development
- syrup and salt with the bridge
- paper with the park
- dish soap with the second housing development
- cookies with the foot path
- red dye with the landfill

Move the plastic tadpole to each station along the river picture. Discuss how the “stations” might affect the tadpole’s environment. Put the brown sugar at the first station (construction site) into the water with the sponge “tadpole”.

Wait about 5 minutes while discussing the changes with the students. (The time will allow for the material to fully “contaminate” the water.) Before moving to the next station, use the strainer to remove the sponge so that children can see what has happened to the “tadpole”. Continue this at each station.

Discuss how the “pollutants” changed the tadpole’s habitat. Talk about how that might affect the tadpole. As a follow-up, students might write about what they observed.

This activity was adapted from a lesson written by Julie Waddell and retrieved from the Alabama Learning Exchange.

http://alex.state.al.us/lesson_view.php?id=30031



Tree Rubbings

This activity can be used with any age group, but it specifically relates to the following Alabama Course of Study objectives:

- Third Grade Science:
 - Describe ways to sustain natural resources, including recycling, reusing, conserving, and protecting the environment
- Fourth Grade Science:
 - Describe the interdependence of plants and animals

This lesson will draw children’s attention to identification of native trees. They will also discuss how trees help animals and people as well as how they can protect the environment.

What You Will Need:

- Photographs of trees that might be observed at Ruffner Mountain Nature Preserve or in the children’s own environment. (You can access a “tree and shrub guide” for Ruffner Mountain at <http://www.ruffnermountain.org/visitors/species-guides.html>)
- crayons
- plain paper
- a tree identification book in case a tree not included in the brochure is encountered

Begin the lesson by gathering the children to discuss what people gain from trees. (What materials do we get from trees? What types of shelters can be made from trees? What helpful animals are found in trees? etc.)

Display photographs of native trees and talk about the significant features of each tree (leaves, branches, bark, things growing in the tree).

Allow students to use crayons and plain paper to make rubbings of a tree of their choice.

Have students compare their rubbings with classmates. Guide children to identify their trees based on the texture of the bark. Students might write about their tree to describe it and to reflect on the experience.

This activity was adapted from a lesson written by Julie Waddell and retrieved from the Alabama Learning Exchange.

http://alex.state.al.us/lesson_view.php?id=29997



Making Coal

This activity can be used with any age group, but it specifically relates to the following Alabama Course of Study objectives:

- First Grade Science:
 - Identify components of Earth's surface, including soil, rocks, and water.

In this lesson, students will learn about coal mining in the late 1800s and early 1900s. This will see mining artifact on their visit to Ruffner Mountain.

What You Will Need:

- an aquarium (if done as a whole class. If done as an individual activity, a 2 or 3 liter bottle with the top cut off will work)
- fine to medium grain sand
- fern fronds
- twigs
- plant leaves
- screen or sifter
- fine silt or mud
- time (about 4 weeks)

Pour 4 to 6 inches of water into the container (aquarium or bottle).

Spread about 2 inches of sand on the bottom of the container.

Drop leaves, sticks, and fern on the sand. Let this sit for two weeks. Have students observe and record the changes they observe.

Gently place 2 inches of fine silt or mud on top of the plant layer.

Wait 2 weeks. Drain any water that might remain. Let this sit for 2 weeks. This produces simulated coal, and if you break the layers, there might be simulated fossils!

This is a smelly activity, so you might want to put it in an area away from usual classroom activities.

This activity is adapted from a lesson written by Kathleen Berry. It can be accessed at <http://www.iu29.org/resources/Documents/CoalElementary.pdf>



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Making Fossils

This activity can be used with any age group, but it specifically relates to the following Alabama Course of Study objectives:

- Third Grade Science:
 - Describe how fossils provide evidence of prehistoric plant life.

What You Will Need:

- modeling clay
- plaster of paris
- Small box lids or plastic dishes
- large container to mix the plaster

Make a smooth layer of clay in the bottom of a small box. This clay represents the mud that the once-living organism fell on to.

Press in a shell, leaf, or anything once living, into the clay.

Mix the plaster of paris according to the package directions. Pour the plaster over the clay in a thin layer, and let it harden.

Carefully remove the clay and hard plaster from the box. Scrape the clay off of the plaster. This shape is like a mold fossil, where a dead animal or plant rotted away and left its shape in the mud, which later turned to rock.

This lesson was adapted from a lesson written by Kendra Harris and retrieved from the Alabama Learning Exchange.

http://alex.state.al.us/lesson_view.php?id=11696