LIFE SCIENCE

3RD GRADE

FUR, FEATHERS, AND FERNS

RATIONALE FOR ADVENTURE

In this adventure, students will explore the outdoor world of mammals, birds, plants, and more! They will understand that every living thing has a home—often very close by. Students will also discover that almost every living thing's neighborhood is a home to at least one type of another living thing. Protecting those homes, called habitats, is up to everyone.

GEORGIA STATE STANDARDS:

Life Science

S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.

a. Ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic regions.
b. Construct an explanation of how external features and adaptations (camouflage, hibernation, migration, mimicry) of animals allow them to survive in their habitat.
c. Use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.

SOUTH CAROLINA STATE STANDARDS:

Ecosystems: Interactions, Energy, and Dynamics (LS2)		
3-LS2-1. Construct an argument that some animals form groups that help members survive.		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Engaging in Argument from Evidence Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence, data, and/or a model. NRC Framework Link	**LS2.D: Social Interactions and Group Behavior** Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. Groups can be collections of equal individuals, hierarchies with dominant members, small families, groups of single or mixed gender, or groups composed of individuals similar in age. Some groups are stable over long periods of time; others are fluid, with members moving in and out. Some groups assign specialized tasks to each member; in others, all members perform the same or a similar range of functions. NRC Framework Link	**Cause and Effect** Cause-and-effect relationships are routinely identified and used to explain change. NRC Framework Link

Biological Evolution: Unity and Diversity (LS4)		
3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can thrive, struggle to survive, or fail to survive. ***Clarification Statement:*** *Examples could include needs and characteristics of the organisms and habitats involved. Changes in a habitat are sometimes beneficial, sometimes neutral, or sometimes harmful to an organism.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Engaging in Argument from Evidence Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). Construct an argument with evidence. NRC Framework Link	**LS4.C: Adaptation** Adaptation can lead to organisms that are better suited for their environment. For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. NRC Framework Link	**Cause and Effect** Cause-and-effect relationships are routinely identified and used to explain change. NRC Framework Link

TAKEAWAYS FOR STUDENTS

- Learning about the world of creatures and how we affect our environment
- Practicing ways to conserve in the world around us
- How to be thrifty.

ADVENTURE REQUIREMENTS

1. While hiking or walking on the Nature and Adventure Center Trail, students will use the Hiking Trail Observations worksheet to identify six signs that any mammals, birds, insects, reptiles, or plants are living near the place where you choose to hike or walk.

2. Visit one of the following: zoo, wildlife refuge, nature center, aviary, game preserve, local conservation area, wildlife rescue group, or fish hatchery. Describe what you learned during your visit.

3. Name one animal that has become extinct in the last 100 years and one animal that is currently endangered. Explain what caused their declines.

4. Observe wildlife from a distance. Describe what you saw.

5. Use a magnifying glass to examine plants more closely. Describe what you saw through the magnifying glass that you could not see without it.

6. Learn about composting and how vegetable waste can be turned into fertilizer for plants.

PREPARATION AND MATERIALS NEEDED

- Pictures of local animals, birds, and plants
- At least one pair of binoculars for each student group
- Magnifying glass for each pair of students
- Paper and pencil for each student

INSTRUCTOR'S LESSON PLAN

PRIOR TO EDUCATIONAL EXCURSION:

Before the educational excursion, teachers will need to review an animal that has become extinct in the last 100 years and learn why the animal became extinct. Students should also learn about one animal that is on the endangered species list. Finally, with the teacher's permission, students can look on a government website to learn more about endangered species in their area. Students will share what they learned on the educational excursion.

OPENING

• Recite the Outdoor Code. Note that students will focus on being considerate in the outdoors.

• Recite the principles of Leave No Trace. Tell students that they will look for ways to demonstrate leaving what they find and being kind to other visitors.

TALK TIME

• Introduce the Fur, Feathers, and Ferns adventure. Build interest by describing the goals of the adventure and some of the activities that are planned.

• Explain that stretches prepare Students physically for hikes and other physical activities. Remind

everyone in the class of the rules of safe hiking.

• Explain that this adventure will require everyone to stay alert to signs of creatures. Ask students what they can do to help others see the wildlife. (Ideas might be to remain quiet and listen, and to share with others in the class through hand signals when someone sees something.)

• Discuss what stduents will do on the hike to demonstrate the specified principles of the Outdoor Code and Leave No Trace.

EDUCATIONAL EXCURSION INSTRUCTIONAL MATERIALS WORKSHOP

Using Binoculars

• Teach students how to adjust the two halves to match the distance between their eyes.

• If a student wears glasses, they should be kept on when using binoculars.

Safety

• Teach students to stay in their groups and never walk while looking through the binoculars. This is to avoid walking into holes, bumping into trees, or falling into streams.

• Tell the students to wear the binocular strap around their necks—they should not carry the binoculars or set them down. This will help prevent dropping the binoculars into a pond, for example, or accidentally leaving them behind.

Practice

• Bears should first look at the object they want to view without using the binoculars.

• Then, they should raise the binoculars slowly up to their eyes.

• Once they've found the object again, they can focus the lens.

• While in the outdoors, see if the students can hear an animal or bird first and then try to find it with their binoculars.

ACTIVITIES

◆ Activity 1: Hike

• Go on a hike through the Nature and Adventure Center Forest. While hiking, focus on observing and identifying six signs of birds, animals, insects, reptiles, and plants.

• During the hike, be on the lookout for animals such as squirrels or birds that can be observed in most settings. Encourage each student to observe what the animal is doing and to share the binoculars for a better view. Challenge students to explain how watching animals from a distance might be preferable to getting closer. Possible responses: the animals are less likely to flee; you see them engaged in their natural behavior.

• Stop several times along the hike to examine interesting objects with a magnifying glass. Remind students to beware of inadvertently burning insects with a magnifying glass. Ask students to describe what they can see with the lens that would not otherwise be visible. Possible responses: small hairs on plants such as mints; distribution of color/pigments; bark texture; details in leaves such as pores, other small openings, or veins.

REFLECTION

Ask students to reflect on the Outdoor Code. How were they considerate in the outdoors? Did they leave what they found? Did they help other visitors enjoy the outdoors? Why are those principles important?

◆ Activity 2: Composting in a Cup

Materials:

- 16-ounce cup with holes in the bottom
- Pair of gloves
- Large bowl
- Organic compostable items (leaves, grass clippings, vegetable scraps, fruit scraps, coffee grounds, etc.)
- ¼ cup soil or dirt
- 1–2 teaspoons of water
- Piece of plastic wrap
- Rubber band
- Large plastic spoon

INSTRUCTIONS:

Before beginning this activity, you will need to collect the organic items to compost. There are many different materials you can use. As a general rule, anything that comes from a plant or tree is good to include. Once your items are together, place them in the large bowl, add the 1–2 teaspoons of water and the ¼ cup of soil, and mix.

Next, wearing the gloves and using the plastic spoon, place two scoops from the bowl into the 16-ounce cup. Now lay the piece of plastic wrap over the top of the cup and fasten it to the rim with the rubber band. Make sure the wrap is tight and the rubber band is secure.

Compost piles need sun, shade, water, and movement. So put your cup in a window that gets a good amount of sunlight or outside in an area that is exposed to the sun during the day. Every so often, add 1 teaspoon of water to your cup and give the contents a little shake. The water and movement helps with the composting process. The sun warms the cup of organic material, which promotes increased microbial activity. (This is just a fancy way to say that the bacteria and fungi LOVE to live in a warm environment!) The shade keeps the compost from becoming too warm, which could lead to a loss of essential moisture.

Your compost cup is now complete, and the composting process is underway. It's time to let nature do its thing!

The Science Behind It

Explain to students: Compost forms naturally nearly everywhere! Leaves drop from trees. Grass clippings are left after you mow the lawn. Plants and animals die. Over time, these organic materials break down or decompose. The rich, dark brown, crumbly, soil-like material that results is called compost. Tiny living things do much of the work of breaking down organic materials to make compost. These little workers are called microorganisms and include such things as bacteria and fungi. Worms, pill bugs, and other creatures living in the soil help the microorganisms transform the materials into compost. The organic materials provide many of the nutrients that plants need for growth and activity. Eventually, these nutrients are returned to the soil, to be used again by trees, grass, and other plants. This is nature's way of composting and recycling! The compost that you make at your home or school can be used as mulch or mixed into the soil. Compost is one of nature's best mulches and soil amendments. It helps you to save money by reducing your fertilizer, landscaping, and water bills, and by cutting down on trash pickups or disposal.

◆ **Activity 3: Pinecone Treats**

Materials:

- Peanut butter
- Cornmeal
- Pinecone
- Wire

Mix together:

1. Equal amounts of peanut butter and cornmeal, about 2 teaspoons of each.
2. The cornmeal reduces the stickiness of the peanut butter, making the mixture safe for birds to eat.
3. Tie a piece of wire around a large pinecone for hanging from a tree.
4. Spoon the mixture in between the pinecone petals. The birds will love it.

SONG TIME

"The Ants Go Marching"

The ants go marching one by one. Hurrah! Hurrah!

The ants go marching one by one. Hurrah! Hurrah!

The ants go marching one by one; The little one stops to suck its thumb.

And they all go marching,

Down into the ground to get out of the rain.

Boom, boom, boom, boom, boom, boom, boom.

The ants go marching two by two; Hurrah! Hurrah!

The ants go marching two by two; Hurrah! Hurrah!

The ants go marching two by two; the little one stops to tie its shoe

And they all go marching,

Down into the ground to get out of the rain.

Boom, boom, boom, boom, boom, boom, boom.

The ants go marching three by three; Hurrah! Hurrah!

The ants go marching three by three; Hurrah! Hurrah!

The ants go marching three by three; the little one stops to climb a tree

And they all go marching,

Down into the ground to get out of the rain.

Boom, boom, boom, boom, boom, boom, boom.

The ants go marching four by four; Hurrah! Hurrah!

The ants go marching four by four; Hurrah! Hurrah!

The ants go marching four by four; the little one stops to open a door

And they all go marching,

Down into the ground to get out of the rain.

Boom, boom, boom, boom, boom, boom, boom.

The ants go marching five by five; Hurrah! Hurrah!

The ants go marching five by five; Hurrah! Hurrah!

The ants go marching five by five; the little one stops to do a jive

And they all go marching,

Down into the ground to get out of the rain.

Boom, boom, boom, boom, boom, boom, boom.

Name:_____

Hiking Trail Observations

Instructions:

Identify **6** signs that plants and animals (such as mammals, birds, insects, fish, or reptiles) exist and live at the Nature and Adventure Center.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

USE YOUR PENCIL AND DRAW A SCETCH OR PICTURE OF 1 OF THE PLANTS OR ANIMALS YOU OBSERVED IN THE SPACE BELOW!