

Girl Scout Council of the Southern Appalachians

Knoxville Service Center
1567 Downtown West Blvd
Knoxville, TN 37919



Eco-Environmental Education (EEE)

ALL AGE LEVELS

PURPOSE: To develop a better understanding of the natural world

INTRODUCTION: Girls, it is a critical time for our natural world. The next 5-15 years will determine the fate of our planet. Most of the decisions people make about the use of our environment are irreversible. Many of our natural resources are irreplaceable. As Girl Scouts, we pledge to "do our best" to use resources wisely and to protect and preserve the natural world. Through awareness, knowledge, and action -- our thoughts, words, and deeds, we as Girl Scouts today can work together to preserve our natural world for the Girl Scouts of tomorrow and for generations to come.

The EEE patch program is provided to give Girl Scouts an opportunity to learn, to experience, to contribute and to make a difference.

OBJECTIVES:

1. Develop awareness and understanding of our natural environment by doing 16 activities related to the environment.
2. Explore the relationships between the soil, water, wildlife and plants.
3. Realize the role every person has in making the world a healthier place to live.

INSTRUCTIONS: Complete a total of sixteen (16) activities: four from each of the four categories (water, soil, plants, wildlife), including the one marked with an asterisk (*) in each category. Record your progress on the chart provided. Remember the asterisk (*) indicates a required activity. Many of these activities can be completed while at camp.

Patches can be purchased at the Girl Scout Shop in the Knoxville Office.

Water (Activity)	Soil (Activity)	Plants (Activity)	Wildlife (Activity)
*1.	*1.	*1.	*1.
2.	2.	2.	2.
3.	3.	3.	3.
4.	4.	4.	4.

CATEGORY I - WATER

Complete four (4) activities in this section, including one marked with an asterisk (*)

1. * Imagine some oil has been spilled into the Tennessee River. Write two or three paragraphs on the possible damage. You may want to include a list of animals and plants affected. Share your ideas with the rest of your fellow Girl Scouts.
2. As a group, try to clean some dirty water. Place a plug of cotton in the hole of a small clay flowerpot. Add layers of sand and crushed charcoal (2 of each). Pour muddy water into the pot, allowing it to drain out into a glass jar. What does the water look like as it comes out? What happened to the debris in the water? Has it stayed in the pot? This is similar to water filtering through the ground.
3. Collect snow using a measuring cup. Level off cup. Do not pack. How many ounces of snow does it take to make 1 cup (8 ounces) of water? Why is snowfall important?
4. Place a clear glass upside down on the grass while sun is shining brightly. Wait 30 minutes, what happened inside the glass?
5. List six ways that water benefits people?
6. Look for ways water is wasted in your home. What can you do to conserve water?
7. Do a pond study activity from pages 13-16 of our Exploring Wildlife Communities with Children.
8. Fill two clear plastic cups with soil. Leave one loose. Pack the other firmly. Add water to each cup. What happens? Why? How can that affect plants?
9. **Brownies:** In the Water Everywhere Try-It, complete the Clean, Clear Water activity.
10. **Juniors:** Complete #6 in the Outdoor Fun badge.
11. **Cadettes/Seniors/Ambassadors:** Complete #3 in the Backpacking Interest Project.
12. Do you use more water taking a shower or a bath? Here's how you find out. When you next take a bath, use a piece of adhesive tape to mark the height of water in the tub. Let the tape stay in the tub. Then the next time you bathe, take a shower. Be sure to put a stopper in the tub drain. When you are finished with your shower, use the tape to check the height of the water in the tub. Did you use less or more water than the time before? Share the results with your group.
13. Visit a water treatment plant or a wastewater treatment plant.
14. Visit a local fish hatchery. Find out about the effects of pollution on aquatic life.
15. Write or call the State EPA and find out where to dispose of household chemicals or other pollutants.

CATEGORY II – SOIL

Complete four (4) activities, including one marked with an asterisk (*)

1. * Put a layer of pebbles, sand or soil in a glass jar. Fill the jar with water and cover it. Shake the jar until everything in the water is mixed. Set the jar down and watch what happens, on and off, for about one hour. Then check it several hours later. How did the water look after you shake the jar? Which material fell to the bottom first? Why? Which material fell last? Why? Based on this experiment, when a fast-flowing river carrying pebbles, sand, and soil begins to slow down, what will fall out first? Last?
2. Find a rotting log; look closely for small plants and animals on it. Feel the wood. Roll the log over carefully (you may find creatures you don't want to study without professional help, i.e., snakes, black widow spiders). Look under the log. How many animals' homes are found? Feel the log. Is it cold? Warm? Wet? Dry? What do you see?
3. People are never truly alone in the environment. Some form of wildlife is near. What may be surprising is that wildlife includes the smallest animal organisms. Most wildlife leave "tracks" in the soft soil. Go on a "track hunt." Buddy up the girls and have them look around the area under your supervision. Have each buddy make a report of their findings.
4. Use a gardener's soil test kit and sample different sections around your area. Are there different plants and animals that live at each site? Find out what chemical farmers add to the soil to grow certain plants. Are these chemicals harmful to plants or animals?
5. You are one of the lucky scientists selected to colonize the Moon. Your job is to grow plants using the lunar soil. Write two paragraphs or list items you may need to add to the Lunar soil in order to start your garden. Can you recycle any left overs to help expand your project?
6. You can learn the most about parks by visiting different ones. Visit at least two (2) parks. Do this as a group activity. Get to know your park. Walk all the paths and then really explore! Look for things such as water, muddy places and puddles, weedy places, piles of leaves or places where there is a thick layer of leaves on the ground. Find dead trees, rocks that can be turned over, flowers that bees visit and bushes where spiders spin their webs. Write a description of each one, how you got there, and what you saw. You can even write about the games you played with your group.
7. Find out about Radon gas. Where does it come from? What can it do? As a group, purchase a Radon test kit from a local hardware store. With adult supervision, perform the test. What can you do about Radon gas?
8. Consult a dietitian, doctor or nurse to find out a person's mineral needs. Make a chart of human mineral (salt, potassium, zinc, iron, etc.) needs. If possible, make a display of the rocks that those minerals came from. What kind of processing must each of these minerals go through before we can sue them?
9. Visit a nursery or greenhouse and have someone discuss:
 - a. What kind of soil they use for the different plants they grow.
 - b. Why plants need soil
 - c. Where do they get the soil they use?
 - d. Extra additives they use.
 - e. Draw a picture of your favorite plant at the site you visit (don't forget to draw soil).
10. **Brownies:** Complete The Soil requirement in the Earth and Sky Try-It.
11. **Juniors:** Complete the Science in the World of the Out-of-Doors E2.
12. **Cadette/Seniors/Ambassadors:** Complete #5 of the Eco-Action interest project.
13. Visit the Knoxville Zoo. Take a note pad and pencil and complete two (2) of the following activities:
 - a. Compare soil in the elephant and bird areas. Note color, moisture, erosion, and plant life. Why are they different?
 - b. Look at the general zoo grounds (paths, animal's areas, around buildings). Are there areas with erosion problems? Describe areas and try to find out what caused the erosion (water, people, animals, other). How can these problems be stopped or reduced?
 - c. Why does the zoo need soil? Give four (4) reasons why -- ask a zookeeper, if needed.
14. Make your own soil. Take a large clay pot and put gravel in the bottom. Add a layer of soil from your yard. Then put in some grass clippings and cover with a thin layer of soil. Add some ground up table plant scraps and cover with a thin layer of soil. Keep adding scraps and dirt until pot is full. Place pot in the open and leave uncovered for two weeks. Check on your new soil is seeing if your plant materials are degrading. After one month, plant some flowers in your pot and enjoy!
15. As a group, show the value of plant cover in prevention erosion. Expose an area of a slope and pour water down the hillside. Catch the run off in a jar. Do the same with a grassy area. Compare jars. Compare areas. Talk about stopping or reducing erosion.

CATEGORY III - PLANTS

Complete four (4) activities, including one marked with an asterisk (*)

1. * Have the group secretary contact the state EPA or county extension agent and find out what effects, if any, acid rain has on the environment in Tennessee.
2. Have someone in your group learn about photosynthesis, transpiration and the water cycle. Share your findings. Try this experiment on a small indoor plant. Water the plant. Put a large clear plastic bag over the plant and secure it to the pot using a large rubber band. Watch what happens to the bag and plant over the next couple of days. Does it make a difference if the plant is in direct sunlight or not? How does this relate to what you learned?
3. Explore the mountain and lake at Camp Tanasi. With a field guide, try to identify some of the plants found in the woods or along the lake. Find a flower or type of grass that you like and draw a picture of it.
4. During the Spring or Fall go on a seed hike. Put some old socks over your shoes. Walk through a field and see how many seeds you collect on your clothing. Shake seeds off or pull off and take home. Put them in the freezer for a week. Take out and plant some of them in a flowerpot. Water your plants. See what grows from your seeds. Does it look like the field you walked through?
5. Adopt-a-Plant in your yard, neighborhood, school yard, or park. Care for it.
 - a. Ask an adult to help you find out what kind of plant it is.
 - b. Draw a picture or take a photograph of your plant.
 - c. Draw or dry press a leaf from the plant.
 - d. Where is your plant located?
 - e. Describe your plant.
 - f. How tall is your plant? How tall will it become?
 - g. Are the fruits, seeds, or other parts of the plant used by people? If so, how?
 - h. Where else in the world might you find your plant?
 - i. What kind of care does your plant require?
 - j. Are there any special stories about your plant?
6. Learn the names and how to identify the Tennessee State flower and tree.
7. Learn about two plant-animal relationships, i.e., bees and flowers, humans and cotton, carnivorous plants and insects, thistles and animal fur, birds and flowers/berries, bagworms and cedar trees, etc.
8. Have a "plant tasting party." Try some plants (not wild) that you have not tasted before, i.e., kiwi, turnip, squash, pomegranate, different nuts, okra, asparagus, plantain, rose petals, coconut, alfalfa sprouts, carob, etc.
9. **Brownies:** In the Earth is our Home Try-It, complete the Recipe for a Miniworld requirement.
10. **Juniors:** Complete the #2 requirement of the Ecology badge.
11. **Cadettes/Seniors/Ambassadors:** Complete requirement #8 of the Plant Culture Interest Project.
12. As a group, explore a camp and make a list of plants that serve as food for wildlife as well as humans. Make two lists: items the animals eat right away and items they store for eating later or both.
13. Plant a garbage garden and take care of it. Plant seeds like pumpkin, watermelon, orange, apples, from fruits or vegetables that you have eaten. You may plant these in individual pots or in a garden in your yard.
14. As a group, plan a special Arbor Day activity; such as learning the origins of Arbor Day. When is Arbor Day in Tennessee?
15. As a group, visit a farm. Find out how plants are important to farmers. Be able to identify some crop plants and their uses. Ask the farmer about two plants that harm his crops. How does he control each of them?

CATEGORY IV - WILDLIFE

Complete four (4) activities, including one marked with an asterisk (*)

1. * Put enough vegetable oil in small containers to submerge three hard-boiled eggs. Add the eggs. Put the eggs under a good light and watch closely. Remove one egg after five minutes and examine it -- before, during, and after peeling off the shell. Try to remove the oil from the outside before attempting to peel the egg. Remove the second egg after 15 minutes and the third egg after 30 minutes, repeating the procedure. Examine each egg carefully. Discuss your observations. What effect could oil have on the eggs of birds nesting near the water?
2. Make or buy two different kinds of bird feeders. Be sure they use different foods, too! Hide and watch your feeders. List the number of birds that visit your feeders over a period of a week. Try to identify some of the birds using a field guide. Move the locations of the bird feeders. Observe another week. Did the numbers of types of birds change? Why or why not?
3. Study amphibians while at camp. When, where and how do we find them? How do they protect themselves? Where do they spend winter? What do they eat? Try to catch a frog and study it while you are at camp. Be sure to watch and feed your frog. Release it where you caught it prior to leaving.
4. Find an article about an endangered animal or plant. What can you do in our community to aid in the survival of these wildlife species?
5. Participate in the Food Web Game found on page 152 in the Outdoor Education in Girl Scouting book.
6. Sit in your backyard and watch the wildlife. Make a list of the natural sounds you hear, the plants or animals you smell, and the animals, birds or insects you see. For a comparison, repeat the project at night.
7. During the winter months, go on a track hike. If you find a set of animal's tracks, try to identify them using a field guide. Follow the tracks. Do they lead to feeding areas, animal homes, or water? Is there more than one animal or different animals?
8. Take a night hike to a particular area of camp and then sit quietly for 30 minutes. You can see animals after dark by using a flashlight covered with a red bandanna. Try to identify as many animal, bird and insect sounds as possible. What smells weren't there during the day?
9. Divide the group into two smaller groups. On small pieces of paper, have each girl write down one animal's name and whether it is wild or domesticated. A girl from one group will then select an animal from the opposite group's pile and act it out for her group. Her group has 30 seconds to decide what the animal is and if it is wild or domesticated. Everyone will take their turn until everyone has gone. The group getting the most correct answers wins. The group should talk about wild and domesticated animals; where they live and what they eat.
10. As a group, contact a beekeeper and arrange a tour. (Most apple orchards have beehives.) What do the bees do for the apple farmer? Ask the farmer what he uses to control problem insects around the apples. Does this get into the bee's honey?
11. **Brownies:** Complete the Sky's My Home requirement of the Earth and Sky Try-It.
12. **Juniors:** Complete requirement #5, Wildlife badge.
13. **Cadettes/Seniors/Ambassadors:** Complete requirement #7 of the Wildlife interest project.
14. Arrange a self-guided, quiet, one-hour bird hike at any state park or a Tennessee wildlife refuge site. Take binoculars and bird identification booklets. Identify as many birds as you can. List them in a notebook. Note: take the hike early a.m. on a calm morning because bird activity is at its peak. They are also easily observed and heard when there is little or no wind.
15. As a group, tour the aviary of the Knoxville Zoo. As a group talk about:
 - a. bird coloration,
 - b. types and importance of various feathers, and
 - c. the role a bird's beak and feet (shape and size) plays in its survival.