



Paleontology

Can You Dig It?

Girl Scout Juniors, Cadettes, Seniors and Ambassadors

Paleontology is the study of fossils. A fossil is any part of a past life form. Most fossils that paleontologists study are several thousand- to one-half billion- years- old (that's 500,000,000!). Paleontologists study fossils to study past life on Earth. Knowledge of the past and Earth's history can provide scientific approaches to future issues that affect life on Earth.

All girls must choose six activities; three required and three electives. There is a bonus activity as well. When completed, girls can write a reflection or choose a creative way to share what they have learned.

PURPOSE: To help Girl Scouts learn more about the field of paleontology and how paleontologists help to uncover the past.

CONNECTION TO GIRL SCOUT LEADERSHIP EXPERIENCE (GSLE):

- Discover: Girls develop critical thinking.

REQUIRED ACTIVITIES:

1. Research the training needed to become a paleontologist. Is a college education required? Name specific skills or talents that are helpful in paleontology. Find out what kinds of jobs paleontologists might hold – and describe the work environment of one of those jobs.
2. Dinosaurs lived on Earth for around 200,000 years. All dinosaur species did not live throughout the entire time period. Select one dinosaur species. Find out when the species lived during the Mesozoic, Triassic, Jurassic or Cretaceous period. How many years ago was each time period? What other dinosaurs were alive during the same time? Create a timeline with your dinosaur species in chronological relation to at least two other dinosaur species.

3. Visit a museum near you that has dinosaur fossils on display. If you can't find a museum to visit in person, visit one online. Websites to try:
 - a. Field Museum of Natural History, <http://fieldmuseum.org/>
 - b. The Royal Tyrrell Museum, www.tyrrellmuseum.com
 - c. The University of California, Berkeley, Museum of Paleontology www.ucmp.berkeley.edu
 - d. Project Exploration, Chicago, www.projectexploration.org
 - e. The Carnegie Museum of Natural History, <http://carnegiemnh.org/>
 - f. Natural History Museum, London, <http://www.nhm.ac.uk/>
 - g. Burpee Museum of Natural History, <http://www.burpee.org/exhibits/collections.asp>

ELECTIVE ACTIVITIES (choose 3):

1. A dinosaur fossil has the same shape as the original object. Trace fossils are indicators of fossil life, like nests, footprints and skin. Have fossils been found in your area? Were the fossils in your area body part fossils or trace fossils? Contact your state geological survey to find out more about dinosaur fossils in your area: <http://www.usgs.gov/state/> and <http://www.stategeologists.org/>.
2. A young girl is credited with finding some of the first dinosaur bones in approximately 1810. Another woman discovered the most complete T. Rex fossil ever in 1990. Name these two women. What kind of training or education did each female have? Research a woman paleontologist with formal training. Good websites include Association for Women Geoscientists, www.awg.org and Project Exploration, www.projectexploration.org.
3. Imagine you are participating in a dig for dinosaur bones and you write a letter home. What would you tell your family about your experience? How is the weather? What do you eat? What clothing do you need to wear? What kinds of tools do you use? What part of the world are you in?
4. Dinosaurs ate plants (herbivores), meat (carnivores) or both (omnivores). Many dinosaurs stalked and killed their meals (predators), while others fed on animals already dead (scavengers). Pick a specific dinosaur and answer the following questions about it:
 - Was it a carnivore, herbivore or omnivore?
 - Was it a predator or scavenger?
 - Did it travel or live in herds?
 - Where are this dinosaur's fossils likely to be found?
5. Scientists believe dinosaurs were close relatives of birds and crocodiles because of similarities in their anatomy. Dinosaurs also share many bones with humans. Using a dinosaur skeleton drawing and your knowledge of human bones, list three bones that dinosaurs and humans have in common.

RESOURCES: There are many websites and books with information on paleontology and dinosaur fossils. In addition to the websites listed in requirement 13, try these sites:

- Zoom Dinosaurs, www.enchantedlearning.com/subjects/dinosaurs
- BBC http://www.bbc.co.uk/sn/prehistoric_life/

BONUS ACTIVITY:

Make your own fossils using chicken bones. Try to use a whole chicken for this activity so you will be able to see all the bones. After cooking the chicken and eating the parts your family enjoys, remove the remaining meat from the bones by placing the chicken in a metal pan, covering it with water and boiling it.

Boil for 30-45 minutes until the meat comes off the bones easily. Rinse the bones and run them through the dishwasher, or boil them for one hour in dishwashing liquid and water. To further age the bones bake them in the oven for about one hour at 350 degrees.

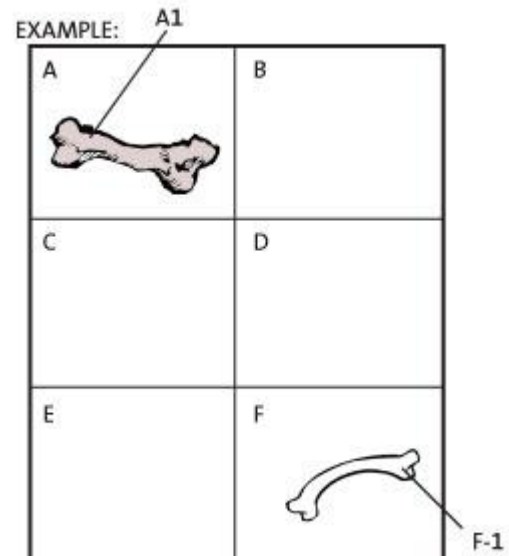
When the bones are cool, break some of them into pieces. The next step in “fossilizing” your bones is to put them into a soil “site” for later excavation.

Prepare an excavation site in a container about the size of a shoe box using potting soil, water and plaster of Paris. Mix soil, chicken bones and water to make a mud-like consistency and finally, add no more than a cup of plaster of Paris. Stir. The plaster of Paris will mimic the hard matrix that surrounds real fossils. (If you do not want to use chicken bones you can use small, plastic animals for your fossils).

Excavate and map your fossils. Draw a map of your excavation container. As you search for your fossil bones, you will need to draw where each bone is on your map (it may be helpful to divide your map into four or more parts). As you find bones, record their exact location on your map by drawing and numbering each bone.

Then, be sure to label a small piece of paper with the specimen number and lay the “fossil” on the numbered paper. If you divided your container into sections, you will need to label your fossils with a section and a number (see example). As you label and number each fossil, record your observations about each fossil: its shape, size, possible part of the body, etc.

Once you have excavated fossils, labeled and numbered them, it is time to clean them! Fossil preparers are people trained to clean fossils to get them ready for display and research. Tiny brushes, dental tools, toothpicks and a magnifying glass make for good tools; remove the “matrix” or accumulated soil, sand and plaster of Paris from your fossils. You will need to figure out which tools to use on each fossil. Be careful not to break the fragile bones. Experiment and have fun!



When you have completed the requirements, you can purchase the patch at any of our six regional offices, www.girlscoutsgcnwi.org or our online shop, www.shopgirlscouts.com and go to “Uniquely Ours”.