#### **Buffalo Caves and Karst**

**Objective:** Students will determine how erosion occurs in karst landscapes and how caves and other landforms are formed in this environment.

## **Standards:**

K-ESS2-1, K-ESS3-3, G.9.K.1, G.9.1.1, 2-ESS1-1, 2-ESS2-2, 2-ESS2-3, G.9.2.1, 3-LS4-3, 4-ESS1-1, 4-ESS2-1, 5-ESS3-1, 6-ESS3-3, 7-ESS3-1, 7-ESS2-2, 7-ESS2-3

**Introduction:** It is important to learn about karst landscapes within Buffalo National River because Arkansas has one of the largest karst networks in the Midwest United States. The geologic processes in this area form caves, sinkholes, springs, and disappearing streams. Buffalo National River has all of these in various areas of the park.

### **Audience:**

4th grade students

This lesson can be adapted to other ages by simplifying or using more complex vocabulary, using more visuals, and using alternate activities.

**Duration:** 45 minutes

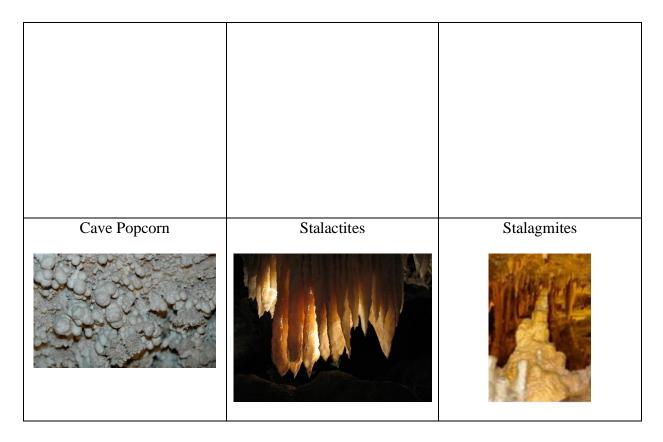
**Vocabulary:** karst landscape, percolates, limestone, cave, stalactites, stalagmites, columns, cave popcorn

#### **Materials:**

- Pictures of caves, bluff shelters, sinkholes, springs, and disappearing stream
- Different pictures of stalactites, stalagmites, columns, and cave popcorn
- Paper plate
- Modeling clay

Stalactites Stalagmites Columns

| Interpretation of the content o



**Warm up:** Show students images of a bluff shelter, cave, spring, a sinkhole, and a disappearing stream. Teacher will ask students what these pictures have in common (rocks, water, pebbles, brown). These are all formed in a karst landscape.

## Main lesson:

- What is karst landscape? A landscape where rocks are dissolved over time. This creates
  erosion and leads to forming caves, sinkholes, springs, and disappearing streams.
   Sedimentary rocks are found in karst landscape
  - Limestone
  - Dolomite

Water percolates through rock and dissolves it over time and this creates openings and leads to erosion which forms different karst features.

• Factors that control or contribute to karst

- Limestone rock near the surface
- Rainwater
- Groundwater circulation
- Karst landscapes features
  - Caves and caverns
  - o Sinkholes
  - Springs
  - Disappearing streams

How do caves form?

- Rainwater percolates through limestone
  - Limestone is dissolved to create underground hollow areas
  - Over a very long time these hollow areas get bigger
- Show karst landscape features

Point out water flow

- Cave Formations (speleothems)
  - These rock formation form as water and minerals drip inside a cave floor and ceilings.
  - Stalactites icicle shaped- hang on tight to cave ceiling, hang down from cave ceiling.
  - o Stalagmites icicle shaped- form up from the ground.
  - Columns when stalactites grown down and stalagmites grow upwards enough for them to meet a column is formed.
  - Cave popcorn Small lumpy formations- water seeps out of the cave wall and splashes when it drips.

• What is it? –Short group activity

Each student will be given a picture of a cave formations. Everyone who has the same speleothem will get in a group to discuss and describe the cave formation they got

Stalactites

**Stalagmites** 

Columns

Cave popcorn

• Animals that live in caves

It is important to be mindful of the animals living in or using caves.

Bats

- White Nose Syndrome (WNS) fungus that is spread cave to cave and can be deadly to bats.
- Why are bats important? They eat large amounts of insects. In other parts of the world they are pollinators.

Salamanders

Cave Fish

- Indian Rockhouse pictures
  - o Cave
  - Waterfall
  - o Panther creek
- Speleothems in a cave review

- When visiting caves:
  - o Make sure you have the right shoes.
  - o Respect wildlife and their home.
  - o Do not touch the cave walls.
  - o Take nothing but pictures.

# **Activity:**

• Time to make a cave

Students will get model clay and a paper plate to create their own cave and formations.