



## **Fossil Lab**

In this lab your students will get a closer look at the fossils they collected and notice differences. We recommend bringing your own supplies.

This lab is done best after the students have gone on Lick Creek Fossil Trail, since the students have then already been introduced to the fossils and collected their own. The students will identify and clean their fossils, even use a microscope to see up close and personal. This lab is done best in a group of 16 fifth grade students and takes approximately one hour.

## **Fossil Lab**

### **Background Information:**

While on the Lick Creek Fossil Trail hike students collected fossils to use in this lab. The fossil pit contains three major fossil types: brachiopods, crinoids (sea lilies), and bryozoans. We find broken portions of the fossils, many lying loose on top of the ground.

These fossils come from rocks of the Bromide Limestone Formation, which originated in the Middle Ordovician Period, 475 million years ago. The area appears to have been associated with a reef that built up under an ancient shallow sea. The ancient sea covered most of the North American continent at that time. Next, a lagoon was formed which later filled up with limestone silt and organic debris made by the plants and animals living there. This unique habitat eventually became extinct; its inhabitants becoming fossilized.

The fossil pit was first excavated and studied by collaborating scientist from the Smithsonian Institute and the University of Texas in the late 1980's. The largest crinoid specimens ever found in the world, about a meter in length, were removed from this site. After three years of study scientist shared their finding as a published monograph.

Your students are privileged to study such a unique geological area. It is such an important fossil rich area that geologist and paleontologists from many area colleges and universities visit the area regularly.

# Fossil Lab

## Purpose:

The purpose of this lab is to use actual geological techniques when studying newly found fossils. The students bring the fossils collected at the fossil pit with to the lab. Fossils may be “found” in the upper portion of this station when a group has not been to the fossil pit prior to the lab.

## Leading the Lab:

1. You will want the students to bring or “find” at least two fossils per person.
2. The students will clean the fossils using dental probes (tooth brushes), soapy water, and milt acetic acid (vinegar).
3. After the fossils are clean, the students may then use a stereoscope or 15x magnifiers.
4. The students should also identify their fossils using the student fossil lab sheets provided.
5. Students should then answer all the questions on the student fossil lab sheet (on a separate piece of paper).

## Materials Needed:

### Teachers bring:

- Zip lock bags, one per student (used in the fossil pit during fossil collecting)

### Students bring:

- Small bag of fossils collected at the fossil pit.

### Provided for you:

- Tubs (8)
- Soap (1 bottle)
- Glacial acetic acid (vinegar) (1 gallon)
- Fish net strainers (4)
- Six inch (15cm) ruler (4)
- Paper Towels (1 roll)
- Forceps (tweezers) (4)
- Dental probe (tooth brushes) (16)
- Microscopes (4)
- Laminated fossil lab sheets (16-30)

### Set Up (prior to lab time):

- Mix up tubs of soapy water
- Mix up tubs of 10% acetic acid (vinegar) and 90% water
- Check that all supplies are present and do not need to be refilled (Please note: If they need to be refilled, you must give Camp Classen staff at least 12 hours notice to refill any supplies.)

## Fossil Lab

Students answer the following questions: (Note: please do not write directly onto this sheet, use a separate paper to answer all questions.)

### Condition of fossil pit on day of excavation:

Dry: \_\_\_\_\_

Wet: \_\_\_\_\_

### Total Number of Fossils Found:

- Brachiopods: \_\_\_\_\_
- Bryozoans: \_\_\_\_\_
  - Tall/Skinny Bryozoans: \_\_\_\_\_
  - Short/Stubby Bryozoans: \_\_\_\_\_
- Crinoids: \_\_\_\_\_
  - Crinoid Heads: \_\_\_\_\_
  - Crinoid Plates: \_\_\_\_\_
  - Crinoid Stems: \_\_\_\_\_

### Percentages:

1. Of your fossils, what percent were:
  - Crinoids: \_\_\_\_\_
  - Bryozoans: \_\_\_\_\_
  - Brachiopods: \_\_\_\_\_
2. Of your crinoids, what percent were:
  - Heads: \_\_\_\_\_
  - Plates: \_\_\_\_\_
  - Stems: \_\_\_\_\_
3. Of your bryozoans, what percent were:
  - Tall/Skinny: \_\_\_\_\_
  - Short/Stubby: \_\_\_\_\_

### Things to think about:

1. What was the most common type of fossil found? Why do you think there were more of these types of fossil?
2. What was the most common type of crinoid part found? What factors would cause this part to be preserved more frequently than other parts of the crinoid?
3. The type of bryozoans found can be used to tell us about water depth and energy levels of the ancient seas. Tall/skinny bryozoans favored shallow water or high-energy environments. Using the percentages above, decide which type of marine environment existed when the fossil pit was being deposited. Does this agree with other evidence from the pit such as storm deposits, thin shale layers, and the presence of crinoids? Why or why not?

