

# Colorado National Monument

Environmental Education

National Park Service  
U.S. Department of the Interior



## Lesson Plan: What Can We Learn From Trace Fossils

(This lesson is adapted from a lesson that can be found at:

**Unit Name:** Fossils

**Grade/Subject:** Fourth/Life Science

**Evidence Outcomes:**

- a. Use evidence to develop a scientific explanation for:
  1. What fossils tell us about a prehistoric environment
  2. What conclusions can be drawn from similarities between fossil evidence and living organisms (DOK 1-3)
- b. Analyze and interpret data to generate evidence about the prehistoric environment (DOK 1-2)
- c. Evaluate whether reasoning and conclusions about given fossils are supported by evidence (DOK 1-3)
- d. Use computer simulations that model and recreate past environments for study and entertainment (DOK 1-2)

**Lesson Learning Targets:** Students will be able to identify trace fossils and understand what can be learned from them

**Vocabulary:** Trace Fossil: Trace fossils (also called ichnofossils or lebensspuren) are the evidence of animal's activity. Unlike molds and casts which are evidence or replicas of skeletal remains or body impressions, trace fossils are sedimentologic or lithologic disturbance from an animal's (or plant's) activity such as resting, locomotion, or feeding.

Dinosaur Trackway: An area where dinosaur track have been preserved. Because they're so common--especially compared to complete, articulated dinosaur skeletons--dinosaur footprints are an especially rich source of information about the size, posture, and everyday behavior of their creators.

**Materials:** Creating a Trackway: 10' X 5' butcher paper, pair of flip-flops (old), tempera paint, paintbrush, paint tray.

Handouts from the following lesson will be needed for this lesson: <http://www.discoveryeducation.com/teachers/free-lesson-plans/discovering-dinosaurs.cfm#mat>

**Background information:** Background information on several different dinosaur track ways in Colorado can be found and shared from these sites:

<http://www.dinoridge.org/>

[http://www.fs.usda.gov/detail/psicc/about-forest/districts/?cid=fsm9\\_032707](http://www.fs.usda.gov/detail/psicc/about-forest/districts/?cid=fsm9_032707)

<http://news.discovery.com/animals/dinosaurs/dinosaur-freeway-120105.htm>

[http://www.dinosaurdepot.com/tracks\\_p1.htm](http://www.dinosaurdepot.com/tracks_p1.htm)

Site with a lot of background information for teachers

<http://paleo.cc/paluxy/ovrdino.htm>

**Learning Sequence:** What will happen during the lesson? Include *differentiation strategies, materials needed, and 21<sup>st</sup> Century Skills* that may be included.

**Into(Launch):** Conduct a demonstration showing how footprints reveal clues to the activities of animals. You will need a long piece of butcher paper roughly 10'x5'. You will also need an expendable pair of flip-flops, tempera paint (any color), a paintbrush, and a paint tray. Pour some paint into the paint tray and brush the bottoms of the flip-flops with the paint. Make sure to get a good coating of paint. Ask for a volunteer from the class to wear the flip-flops and make footprints on the butcher paper. Ask the rest of the class turn around and face the other end of the room (they must not look at the student making the footprints). Have your volunteer walk on the butcher paper. Tell the volunteer to do a series of activities: jump, turn in a circle, limp, hop on one foot, etc. Reapply the paint to the bottom of the shoes if needed. **You can prepare for this activity the day before by asking a student to stay help you during recess.** Once finished, have the class examine the footprints. Begin a class discussion about the footprints. Let the class try to guess what actions took place on the butcher paper. Feel free to circle on the butcher paper various prints that signify hops, circling, limping, etc.

Have a discussion with the students asking them what we might learn from a dinosaur trackway? Lead the discussion so that students understand trackways can help us learn: Who was there, How many animals were there, The sizes of the animals compared to one another, How they were interacting - social activity, such as herds, moving in families, etc, How fast they were moving, and What the sediment was like, and therefore something about the environment of the time.

The teacher provides a picture of several different types of tracks and paths that cross. The teacher reveals only parts of the picture at a time. The students discuss what might be happening in the picture. As each new section is revealed, the students refine their ideas and expand on the story.

- Finally the whole track picture is seen and the students use their journals to write stories about what happened to make the tracks.
- The students discuss the clues that the tracks may give and how they are used to make their guesses.
- The students then create their own track pictures and write stories about them, which they present like the teacher.
- The rest of the class tries to guess what is happening in the student pictures and stories.

Students look at the "What Happened Here?" trackway worksheet. Either on the back or in their journals, students write a story of what this dinosaur trackway tells us.

**Closure:** Students share their stories.

**Differentiation:** Students that have trouble writing can have scribe or dictate the story into a voice recorder.

**Beyond(Independent project/practice):** Students can create their own dinosaur trackways and bring them back to class to share.

**Reflection:** What worked well? Didn't? How will you proceed with the next lesson based on your formative assessment?