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# ROCKS ROCK!

A BEGINNER'S GUIDE TO THE GEOLOGIC  
WONDERS OF NATURAL AREAS



**EACH OF FORT COLLINS'  
NATURAL AREAS TELLS  
PART OF EARTH'S  
HISTORY THROUGH  
ITS UNIQUE FEATURES.**



THE LANDSCAPE OF NORTHERN COLORADO  
WAS SHAPED OVER 2 BILLION YEARS AGO  
BY GEOLOGIC ACTIVITY.

Tectonic plates (big pieces of rock moving beneath the Earth's surface) caused many of the mountain ranges and formations we see today.

Sedimentary rocks formed from erosion in the mountains or the ancient seabed nearby.

Over time, erosion and uplift has broken up rocks of different ages, creating a landscape with rocks of many colors, textures, and ages.

## EXPLORING GEOLOGY ACTIVITIES

### ROCK ID WALK!

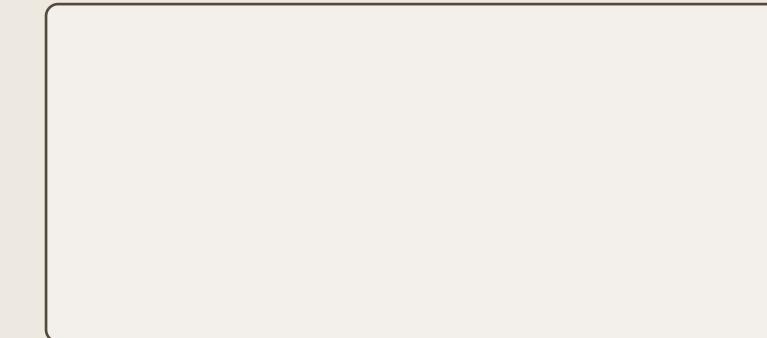
- Go on a rock-hunting adventure! Take photos of different rocks and sort them by their characteristics - like layers, colors, and textures. Use an ID guide or rock app (such as Rockd) to learn more about what you find.

### GEOLOGY JOURNALING -

- Draw the layers of rock you see along the trail. Note their colors and textures. Write down any interesting rock formations or geologic features that catch your eye.

### MAKE UP YOUR OWN STORY -

- Visit a natural area and observe what you see. What would this area have looked like millions of years ago? Write or draw a story about how the land came to look this way. Be creative!



**WHEN VISITING  
NATURAL AREAS,  
PLEASE LEAVE ROCKS,  
MINERALS & FOSSILS  
WHERE YOU FIND THEM.**

THANKS FOR HELPING PROTECT  
OUR NATURAL AREAS!



Natural Areas Department  
Departamento de Áreas Naturales

**970-416-2815**

Rangers  
Guardaparques

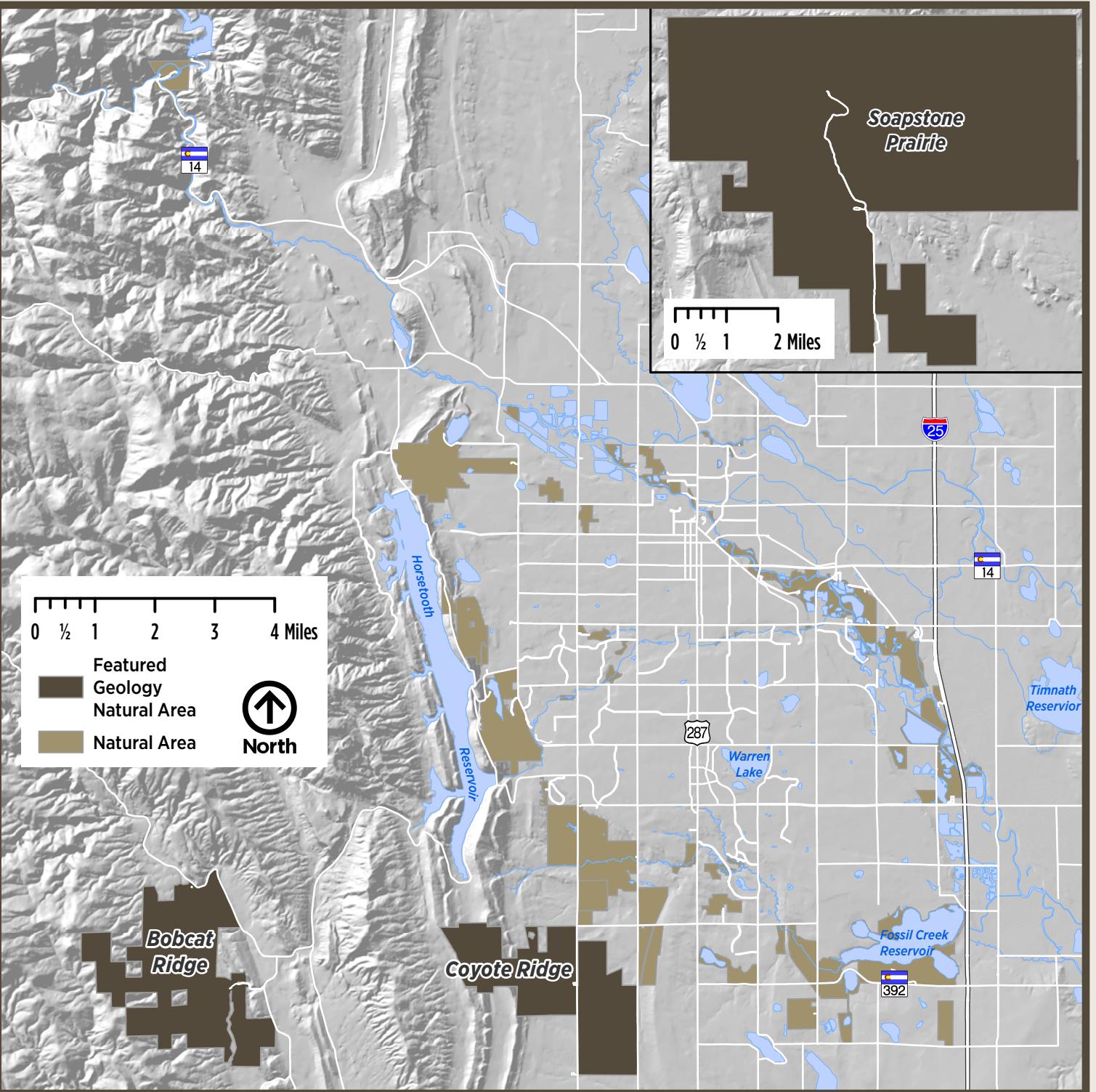
**970-416-2147**

Life-threatening emergency  
Emergencias donde peligra la vida

**911**

[FortCollins.gov/NaturalAreas](http://FortCollins.gov/NaturalAreas)  
[naturalareas@fortcollins.gov](mailto:naturalareas@fortcollins.gov)

# GEOLGY MAP



## SOAPSTONE PRAIRIE

The Mahogany Trail at Soapstone Prairie takes you through a landscape shaped over millions of years. You'll walk on the Ogallala Formation, made of gravel and sand left by ancient rivers. You'll also see granite and quartz rock formations.

Along the way, you'll pass soft, pale rocks from the White River Group, made of volcanic ash that turned into bentonite clay. Scattered limestone boulders on the hillsides are leftovers from old lake beds, and the wavy patterns on some may have once been algae.

As you climb higher, you'll reach the Gangplank, a wide, sloping ridge once used by railroad builders to cross the plains. From there, you'll see how wind and water continue to shape the land.



## BOBCAT RIDGE

The oldest rocks at Bobcat Ridge, 1.3 billion years old, are a mixture of metamorphic and igneous rock types. Look for their darker, tombstone-like shapes along the Upper Valley Loop, alongside younger sedimentary rocks like sandstone that have been shaped by erosion.

On the Valley Loop, you can experience the "The Great Unconformity", a gap in time in the rocks. Start walking on 300-million-year-old sandstone from the Fountain Formation (the same rock as Red Rocks Amphitheater), but watch for a line of rounded quartz pebbles. When you cross it, the rocks change to metamorphic and igneous rocks that are 1.3 billion years old. The rocks in the years in between have eroded away, leaving little trace as to what they were.



## COYOTE RIDGE

Millions of years ago, the area we now call Coyote Ridge was covered by a vast ocean called the Cretaceous Seaway. Layers of sand, mud, and limestone settled on the ocean floor, compacted over time, and were lifted up when the Rocky Mountains rose, forming the rocks we see today.

Hard sandstones of the Dakota Group form tall ridges called hogbacks, while soft layers like Pierre Shale erode easily to form valleys. Fossils found at Coyote Ridge show that this area was once home to many different creatures.

## TYPES OF ROCKS IN NATURAL AREAS

### SEDIMENTARY ROCKS:

- Examples: sandstone, limestone, shale
- Common in Fort Collins natural areas
- Form over time when sand, minerals, and organic materials pile up in layers. Each layer holds millions of years of history!
- You can see fossils in some of the sedimentary rocks around Fort Collins, especially at Coyote Ridge, Pineridge, and Maxwell natural areas. These fossils are clues to life millions of years ago when a huge sea covered the area during the Cretaceous period.



### IGNEOUS ROCKS:

- Examples: granite
- Found in natural areas at higher elevations
- Form from magma that cooled and crystallized just below Earth's surface, likely near an ancient "subduction zone", or areas where one tectonic plate moved underneath another (like a plate sliding under a table).



### METAMORPHIC ROCKS:

- Examples: schist, gneiss
- Found in natural areas at higher elevations
- These rocks were once either igneous or sedimentary, but changed by extreme heat and pressure. They formed over 1.8 billion years ago when ancient tectonic plates collided and created mountains.



### FOSSILS:

- You can see fossils in some of the sedimentary rocks around Fort Collins, especially at Coyote Ridge, Pineridge, and Maxwell natural areas. These fossils are clues to life millions of years ago when a huge sea covered the area during the Cretaceous period.

