**Simulated Fossil Dig**
**Field Trip Program**
*Revised November, 2014*

**Petrified Forest Focus:** Geology and Paleontology
**School Subjects:** Science & Math
**Grade Levels:** **1st – 5th**
**Duration:** 90 – 120 minutes in class time, 90-120 minutes in-park time

**AZ Science Standards**

- **SC01-S1C1**: compare common objects using multiple senses
- **SC01-S1C2**: Ask questions based on experiences with objects, organisms, and events in the environment.
- **SC01-S1C2**: Scientific testing (investigating and Modeling) Participate in planning and conducting investigations and recording data.
- **SC01-S1C4**, **SC02-S1C4, SC03-S1C4, SC04-S1C4, SC05-S1C4**: Communication; communicate results of investigations
- **SC01-S1C2, SC02-S2C2, SC03-S2C2, SC04-S2C2, SC05-S2C2**: Nature of scientific knowledge; Understand how science is a process for generating knowledge.
- **SC01 – S3C2-02**: Describe how suitable tools (e.g. magnifiers, thermometers) help make better observations.
- **SC01-S1C2-01, SC02-S1C2-01, SC03-S1C2-01, SC04-S1C2-01, SC05-S1C2-01**: Demonstrate safe behavior and appropriate procedures.
- **SC02-S1C1, SC03-S2C1-02, SC04-S1C1**: Observations, Questions, and Hypotheses: Observe, ask questions, and make predictions.
- **SC02-S2C1-02, SC03-S2C1-02, SC04-S2C1-02**: Identify science related career opportunities
- **SC03-S1C2-04, SC04-S1C1, SC05-S1C2-04**: Use metric and U.S. customary units to measure objects; measure using appropriate tools and units of measure.
- **SC03-S1C2-05, SC04-S1C2-05, SC05-S1C2-05**: Record data in an organized and appropriate format.
- **SC03-S1C4-03, SC04-S1C4-03, SC05-S1C4-03**: Communicate with other groups or individuals to compare the results of a common investigation.
- SC03-S4C1-01: Identify animal structures that serve different functions
- **SC01-S6C1-05:** Identify ways to conserve natural resources (eg. Reduce, reuse, recycle, find alternatives.)
- **SC01-S5C1-01:** Classify objects using the following observable properties; shape, texture, size, color, weight

**AZCCR Standards**

- (3.MP.7) Look for and make use of pattern.
- (3.MD.B.4) Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch.
- For Informational Text:
    - (3.RL.1) Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
    - (3.RI.7) Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text
    - (3.SL.3)Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
    - (3.SL.1)Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
    - (3.SL.6)Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
    - (4.RL.1) Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
    - (4.RI.7)Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
    - (5.RI.7) Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
    - (5.RL.1) Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

**Lesson Overview**

**Pre-visit Activities:**

1. Students will read about the three different families of rocks, watch a video about geology, and play a game simulating the changes in the rock cycle.
2. Students will read background text about different types of scientists who study fossils as well as some related vocabulary and then complete a word search and a group matching game.
3. Students will read background text on the most common Triassic plants and animals found in the fossil record at Petrified Forest then complete a short activity to reinforce this knowledge.

**In-park Program:** Students will participate in a simulated paleontological field exercise discovering real and replica fossils. They will map, measure, and identify fossilized remains of Triassic animals and plants. Students will also take field notes and make hypotheses and conclusions about their discoveries. This program is the culmination of the Rocking through the Ages curriculum but can also be conducted as a stand-alone activity. Group size is limited to 25 students.

## Lesson Goals

- develop an understanding of the science of paleontology by learning the skills and concepts involved
- be introduced to geological time periods represented at the park
- explore an aspect of paleontology through participation in a field exploration
- become aware of the importance of preservation of paleontological resources
- understand the role of the National Park Service in the preservation and protection of natural and cultural resources.

## Learning Objectives

- describe paleontology as the study of ancient life on earth through fossils
- list geological time periods represented at the park
- explain why choices have consequences
- use scientific methods adopted by paleontologists
- recognize that paleontological resources are nonrenewable
- describe at least one thing they learned about Petrified Forest National Park and/or the National Park Service.

**Materials** - All materials for the in-park activities be provided by the park. All pre-visit activity materials provided by the school.

## Student Assessment Questions

Use the following questions to help your students prepare for their trip and to assess what they learned after visiting the park.

1. Can you think of two facts you know about Petrified Forest or the National Park Service?
2. What is a fossil? Give an example of a fossil found at Petrified Forest National Park.
3. It is important to protect our natural resources. Fossils are an example of resources that are in danger of being destroyed. Can you list two reasons for why fossils are being destroyed?
4. With any job, most people will do a variety of tasks. Think about all the jobs your teacher does. The same is true of paleontologists. List two jobs you think a paleontologist might do.
5. Geologic time is how scientists measure the age of the earth, the age of rocks, and the age of fossils. The Jurassic Period is the geologic time period when dinosaurs ruled the earth.

Petrified Forest National Park represents the time before the dinosaurs. Do you know the geologic time period represented at the park?

6. National parks were created to protect natural and cultural resources for future generations. Can you explain why this is important?

## Pre-visit Lesson #1 – Introduction to Geology at Petrified Forest

**Related Vocabulary (reference for entire unit)**

- **Chinle Formation** - rock formation within Petrified Forest National Park and the larger area of the Painted Desert, containing several distinct rock layers, dating to over 200 million years ago; represents the Late Triassic Period
- **Clay** - fine-grained material, slippery when wet, widely used in making bricks, tiles, and pottery, particle size is < 1/256 millimeters; found in mudstone and shale
- **Deposition** - a natural process in which sediments are laid down layer by layer through wind, water, gravity, or ice movements
- **Erosion** - the movement of earth material from one place to another due to forces such as water, wind, gravity, or ice movements
- **Epoch** – a division of geologic time that is a subdivision of a *period* and is itself subdivided into *ages* (the Triassic Period has contains three epochs; the Early, Middle, and Late Triassic.)
- **Fossil** - any record of past life found preserved in rock; can be plant materials such as stems, seeds, or cones, and pollen, or animal parts such as bone, shells, or teeth; can be trace impressions, such as tracks, footprints, trails, burrows, leaves, etc.
- **Fossilization** - a process by which plant and animal remains or their impressions are preserved in rock *(evidence of life preserved by a geologic process)*
- **Geology** - a science that concentrates on the origin, history, and structure of the earth including the study of rocks and the forces acting upon the earth
- **Limestone** - type of sedimentary rock composed of calcium carbonate, usually formed in shallow marine or freshwater environments and often containing invertebrate fossil evidence.
- **Magma** - molten rock beneath the Earth's surface; surface magma is called lava
- **Mineral** - naturally occurring chemical element or compound with specific physical properties, composition, and crystal form
- **Mudstone or shale** - fine grained sedimentary rock composed of silt and clay sized particles
- **Organic material** - dead plant and animal matter in various stages of decomposition or fossilization

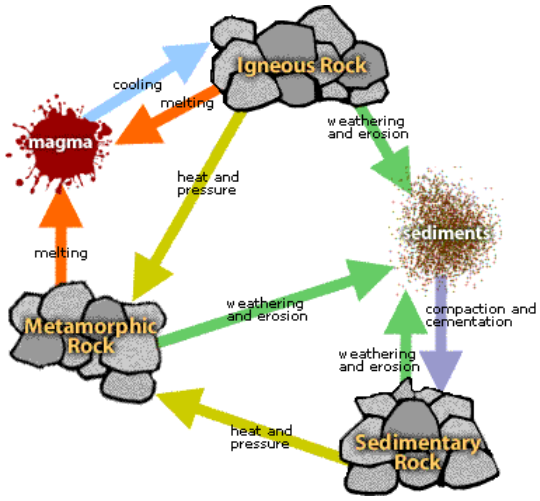
- **Pangaea** - a supercontinent in existence during the Mesozoic and Paleozoic Eras that contained all seven continents present on Earth's surface today in a single land mass
- **Permineralization** - fossilization through in-filling of pore spaces in organic material by minerals; organic material is encased within the mineral (scientific term for petrification)
- **Period** - division of geologic time smaller than an era, based on rock layers and the fossils they contain
- **Relative Dating** - dating of events or substances in comparison with one another, in chronological order; comparing types of fossils is often a relative dating technique
- **Sand** - loose, granular, gritty particles of worn or disintegrated rock, finer than gravel, **c**ommonly composed of silica; particle size is 1/16 - 2 millimeters
- **Sandstone -** type of sedimentary rock composed of cemented sand grains
- **Sediment** - material suspended in water or air that eventually settles out, usually in layers
- **Sedimentary** - rock formed from the deposition, accumulation, and cementation of sediments, usually forming layers, often including fossils
- **Triassic Period** - the first geologic timespan within the Mesozoic Era, dating from 248-206 million years ago; the Late Triassic Period is well represented at Petrified Forest National Park

Geology is a science that concentrates on the origin, structure, and processes of the earth. Geologists study the composition, distribution, formation, and changes of rocks in order to better understand the earth and its ancient and modern environments. Without geology, paleontologists would have little understanding of the fossilized remains of ancient life.

Activity – The Three Rock Families
Time Needed - 45 minutes
Materials:

- Computer or smartboard with internet to play videos
- name tags and markers

*This activity can be conducted outside or in a gym.




The earth is composed of three major rock types**: igneous, sedimentary, and metamorphic.**

- **Igneous** rocks are heat-formed rocks, originating from magma, or molten rock, found underground. Lava is magma that has flowed onto the Earth's surface. (Obsidian and pumice are examples of igneous rock.)

- **Sedimentary** rocks are formed from sediment, or small particles (clay, silt, sand, gravel) of existing rock. The sediment is compressed cemented together over time. Sediment is transported and deposited by earth forces such as water, wind, gravity, and ice movements. Fossils are most often found in sedimentary rock, where organic material was deposited along with the sediment. (Sandstone, limestone, and shale are examples of sedimentary rock.)

- **Metamorphic** rocks were formed under intense heat and pressure, squashing, stretching, and/or cooking existing igneous or sedimentary rock, changing the appearance and mineral composition. (Marble is an example of a metamorphic rock that used to be the sedimentary rock limestone.)

    - Watch this video with your students to learn more: https://www.youtube.com/watch?v=6qaG3MqI-4o – 3 Types of Rocks
    - https://www.youtube.com/watch?v=BsIHV__voMk – Bill Nye - Rocks Rock!

# Rock Cycle Game

Procedure:

The object of this game is to have students simulate the changes that occur during the rock cycle where they will be tagged by one of the Earth Process students and change into a different kind of rock.

- Three students are selected or volunteer to be Earth Processes and stand in the middle of the field/gym. One student represents Erosion, Compaction, and Cementation, one student represents Heat and Pressure, the third is Melting and Cooling. They write these on their name tags so other students can tell what they are. Their goal is to tag other students so that the type of rock they are changes.
- The rest of the class lines up along one side of the field/gym facing the students in the center. These students decide to be sedimentary, igneous, or metamorphic rocks and write which one they are their name tags.
- On a count of three (or a whistle) the students representing the rocks run towards the students representing the earth processes. Their goal is to get to the other side of the field/gym without being tagged by one of the students in the center.
- If they are tagged then they have to change what they are on their name tag depending on which process student got them. These changes are listed below. A diagram of the rock cycle can be used a reference for what changes can occur.

  Sedimentary – tagged by Erosion…= no change, student is not out
  Sedimentary – tagged by Melting and Cooling = igneous rock
  Sedimentary – tagged by Heat and Pressure = metamorphic rock
  Metamorphic - tagged by Erosion…= sedimentary rock
  Metamorphic - tagged by Melting and Cooling = igneous rock
  Metamorphic - tagged by Heat and Pressure = no change, student is not out
  Igneous - tagged by Erosion…= sedimentary rock
  Igneous - tagged by Melting and Cooling = no change, student is not out
  Igneous - tagged by Heat and Pressure = metamorphic rock

- Once a student is tagged, and they change their rock type, then their turn is over and they stand to the side in groups of their rock types. The rounds continue until all the rock students have been tagged and changed to other types of rocks. The game can be played more than once so that students can learn all the different changes within the rock cycle.
- If there are students in the class that are not able to run then they get a special role. They represent a catastrophic event like a meteor collision or a super volcano. During the game, but before the round has begun, they can choose to affect all the remaining students who are rocks. The students are still in the game but they have to change their rock types accordingly.

**Pre-visit Lesson #2 - Who Studies What?**

**Background Knowledge** (for teachers and students)
Paleontology is a science that investigates the remains of ancient life and the changing forms of life through time. Paleontologists must have an understanding of geology, biology, and ecology to interpret the clues of the ancient past. They piece together information from rocks - how rocks form, how they change over time, and what environments they represent - in order to know which layers of rock might contain fossils. They must understand animal and plant anatomy, physiology, and behavior in order to interpret the fossils they find. With an understanding of the relationships between organisms and their environment, paleontologists become paleo-ecologists and can create images of entire ancient ecosystems. Because the past can never be recreated, paleontological resources are considered nonrenewable and are in need of protection and preservation.

Petrified Forest National Park contains a wealth of fossils from the Late Triassic epoch that are over 200 million years old. These fossils are contained in the layers of the Chinle Formation, also known as The Painted Desert. The process of science and field work is very important to telling the story of Petrified Forest NP because the first paleontological research began in the early 1900's and continues today. Both the geology and paleontology within the park have been and continue to be extensively studied. The park strives to foster public appreciation for the new information that is learned as part of a larger appreciation for protecting and learning in public lands.

The Bidahochi Formation consists of igneous rock formed in more recent times, 4-8 million years ago, during the Tertiary Period of the Cenozoic Era. A large lake basin covered most of northeastern Arizona. Inside and outside the lake basin volcanoes formed and erupted, spreading ash and lava over land and into the lake. Exposed in the park are volcanic landforms that began forming under water, such as Pilot Rock. Where the Bidahochi Formation meets the Chinle Formation is an unconformity, a break in the rock record. Due to erosion occurring before the Bidahochi formed, 200million years of time represented by rock layers is missing! The hardness of the basaltic rock of the Bidahochi protects the softer rock of the Chinle Formation from erosion.

By studying the geology and the fossils in the park, scientists can create an image of the past environment of the Late Triassic. Different sedimentary layers of sandstone, mudstone, conglomerates, and bentonite clay (clay and volcanic ash), as well as the different minerals with these rocks tell us that a large body of moving water existed for about 18 million years, changing in size and depth throughout that time. Fossils of fresh water animals such as mussels, snails, crayfish, sharks, and lungfish show that this body of water was an extensive river system. Fossils of plants such as ferns, cycads, giant horsetails, gingkoes, and tropical conifer trees (the petrified

wood) show that the Late Triassic environment, in what is now Northern AZ, was a sub-tropical forest. Fossils of larger vertebrate animals show reptiles (not dinosaurs) to be the dominant fauna of the time. Some very early dinosaur bones have been found in some of the youngest layers in the park showing that dinosaurs began to evolve at the very end of the Triassic. Each summer new fossils are collected from within the park showing either new species never found anywhere in the world, new species not previously found within the park, or additional fossils of known species that tell us more about those animals or plants.

Related Vocabulary:

Ology - a subject of study; a branch of knowledge
Paleo - older or ancient; especially relates to the geological past.
Botany - the scientific study of plants, including their physiology, structure, genetics, ecology, distribution, classification, and economic importance.
Ecology - the branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Climate - the weather conditions prevailing in an area in general or over a long period.
Spores – A small, usually single-celled, reproductive body that is capable of growing into a new organism, produced especially by certain fungi, algae, and non-seedbearing plants such as mosses and ferns.
Seeds - The grains or ripened ovules of plants used for sowing; the fertilized ripened ovule of a flowering plant containing an embryo and capable normally of germination to produce a new plant.
Pollen - a fine powdery substance, typically yellow, consisting of microscopic grains discharged from the male part of a flower or from a male cone. Each grain contains a male gamete that can fertilize the female ovule, to which pollen is transported by the wind, insects, or other animals.
Fossils – The remains of past living organisms that have been preserved by a geologic process; can be the full replacement of stone, an impression, or carbon film.
Bones - any of the pieces of hard, whitish tissue making up the skeleton in humans and other vertebrates
Microscopic – something that is so small as to be visible only with a microscope.
Vertebrate - an animal distinguished by the possession of a backbone or spinal column, including mammals, birds, reptiles, amphibians, and fish.
Invertebrate - an animal lacking a backbone, such as an arthropod, mollusk, annelid, coelenterate, etc.

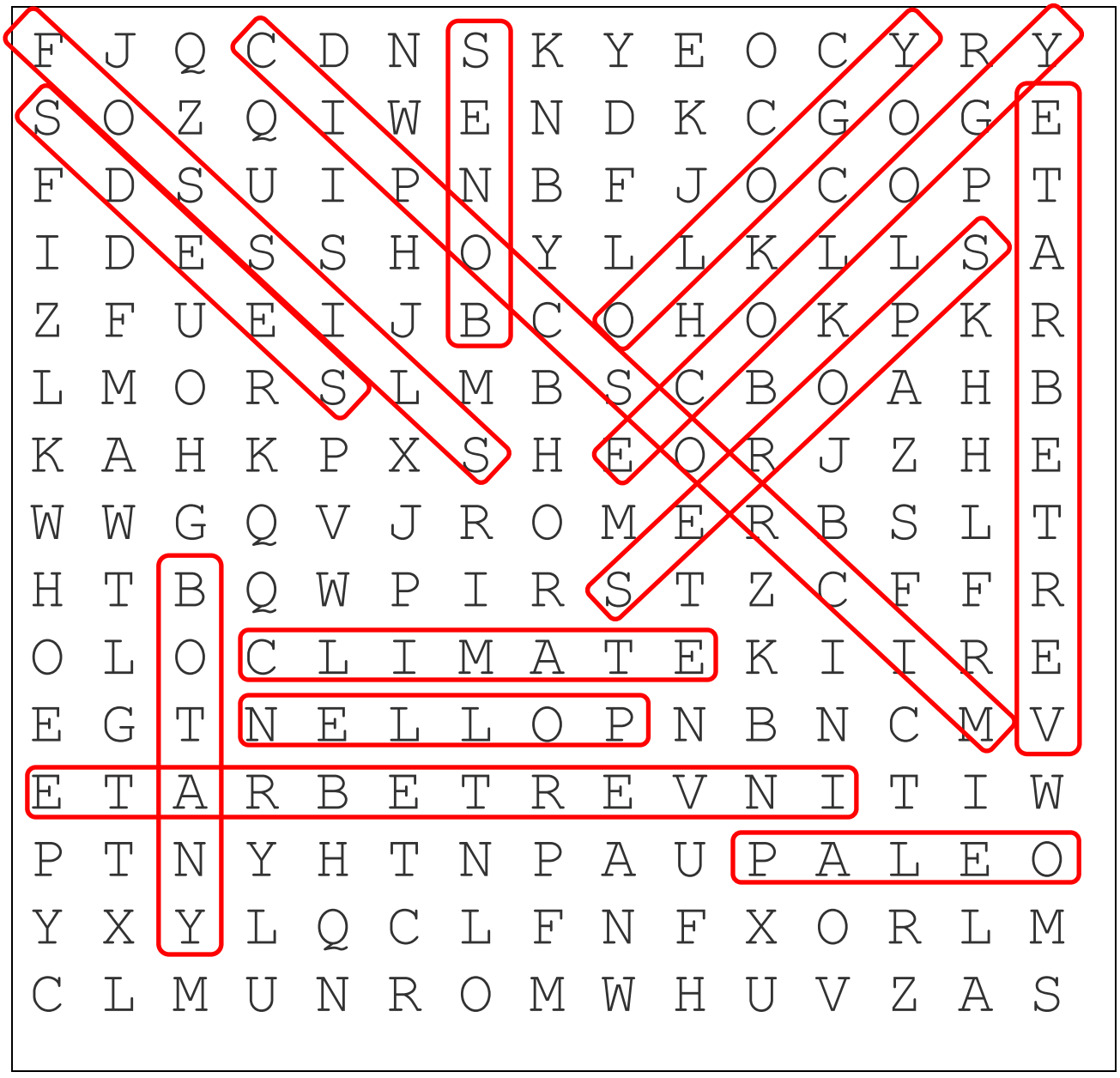
Activity #1 – Vocabulary Word Search – see next page as a handout (20 minutes)

Find and circle the following words in the puzzle below. The words might be vertical, horizontal, forwards, or backwards.

| | | | | |
|---|---|---|---|---|
| botany | seeds | microscopic | pollen | spores |
| ecology | ology | vertebrate | fossils | |
| climate | paleo | invertebrate | bones | |

F J Q C D N S K Y E O C Y R Y
S O Z Q I W E N D K C G O G E
F D S U I P N B F J O C O P T
I D E S S H O Y L L K L L S A
Z F U E I J B C O H O K P K R
L M O R S L M B S C B O A H B
K A H K P X S H E O R J Z H E
W W G Q V J R O M E R B S L T
H T B Q W P I R S T Z C F F R
O L O C L I M A T E K I I R E
E G T N E L L O P N B N C M V
E T A R B E T R E V N I T I W
P T N Y H T N P A U P A L E O
Y X Y L Q C L F N F X O R L M
C L M U N R O M W H U V Z A S

# Word Search Answer Key



Activity #2 – "What Kind of Scientist Are You?" Matching Game

Time required – 15 minutes teacher prep time for cutting out game cards (can be laminated for durability if desired), 20 minutes class time for the game

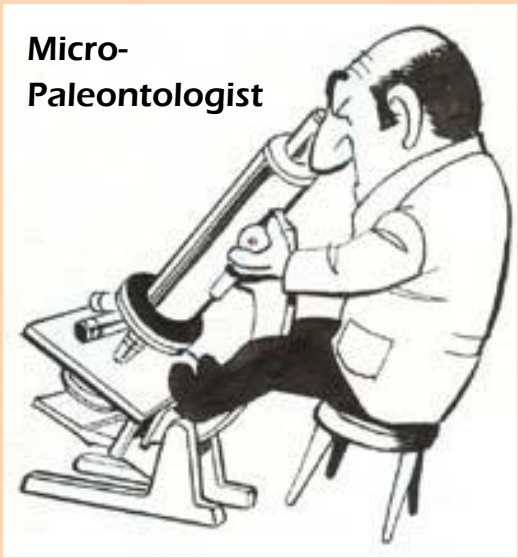
Materials: One set of game cards per student group

Procedure:

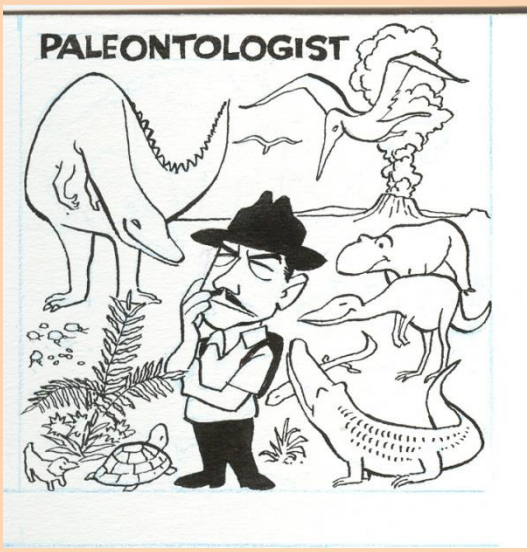
- Split up the class into groups of 3 or 6 students. Each group gets a set of Scientist game cards. (each group should have six Scientist Drawings cards and six Scientist Descriptions cards)
- Students shuffle all of the drawing cards and all of the description cards, but do not mix them together.
- Each student in the group gets two drawing cards to hold (1 each if it's groups of 6). All of the description cards are placed face down on the table in front of the students.
- Students go in turns picking up a description card and reading it out loud to the group. The student with the drawing that matches the description puts their card face up on the table and says "I am a…" whichever scientist is on the card. The matched cards get put to the side.
- Play continues until all the cards are matched up.
- Game can be repeated if time allows, reinforcing the information.

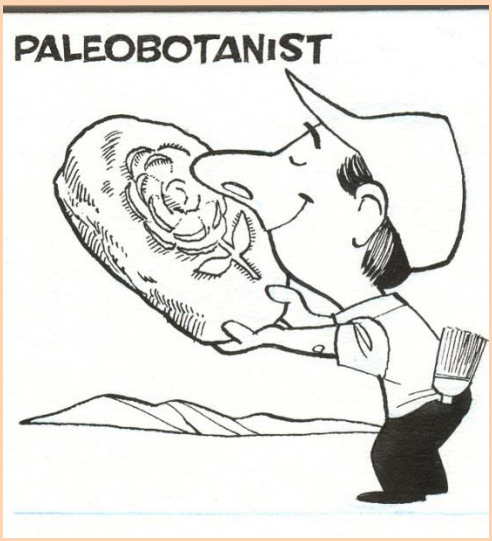
# Scientist Drawings

Micro-
Paleontologist

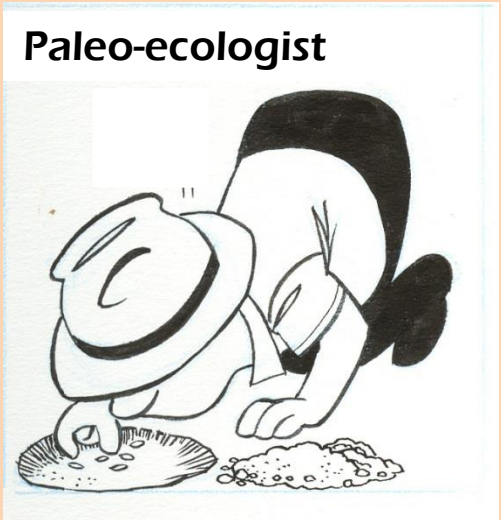


Vertebrate
Paleontologist

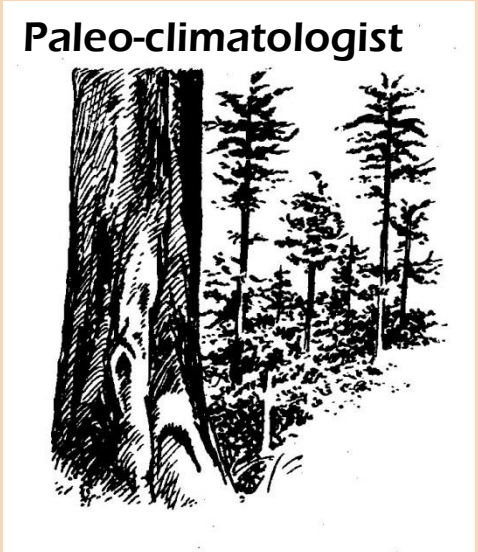



Paleo-ecologist



Paleo-climatologist



# Scientist Descriptions

The type of science I do focuses on plant fossils, including algae, fungi, and related organisms, as well as mosses, ferns, and seed plants.

The type of science I do investigates individuals, populations, and communities of ancient organisms and their interactions with each other and their changing environments.

The type of science I do studies past climates. I use clues created during past climates, known as proxies to determine paleoclimates. Organisms, such as coral, diatoms, and ice cores are good proxies. Proxies may or may not be fossilized.

The type of science I do uses fossils and other clues from the past to reconstruct complete environments. I have to study all parts of ancient life.

The type of science I do focuses on studying fossils of past living organisms that **did not** have spines.

The type of science I do focuses on studying fossils of past living organisms that **did** have spines.

## Pre-visit Lesson #3 – Introduction to Triassic Animals and Plants

Time required – 30 minutes of group class time, and 30 minutes of individual student work time.

Materials – Background information provided below, pencil and paper for students.

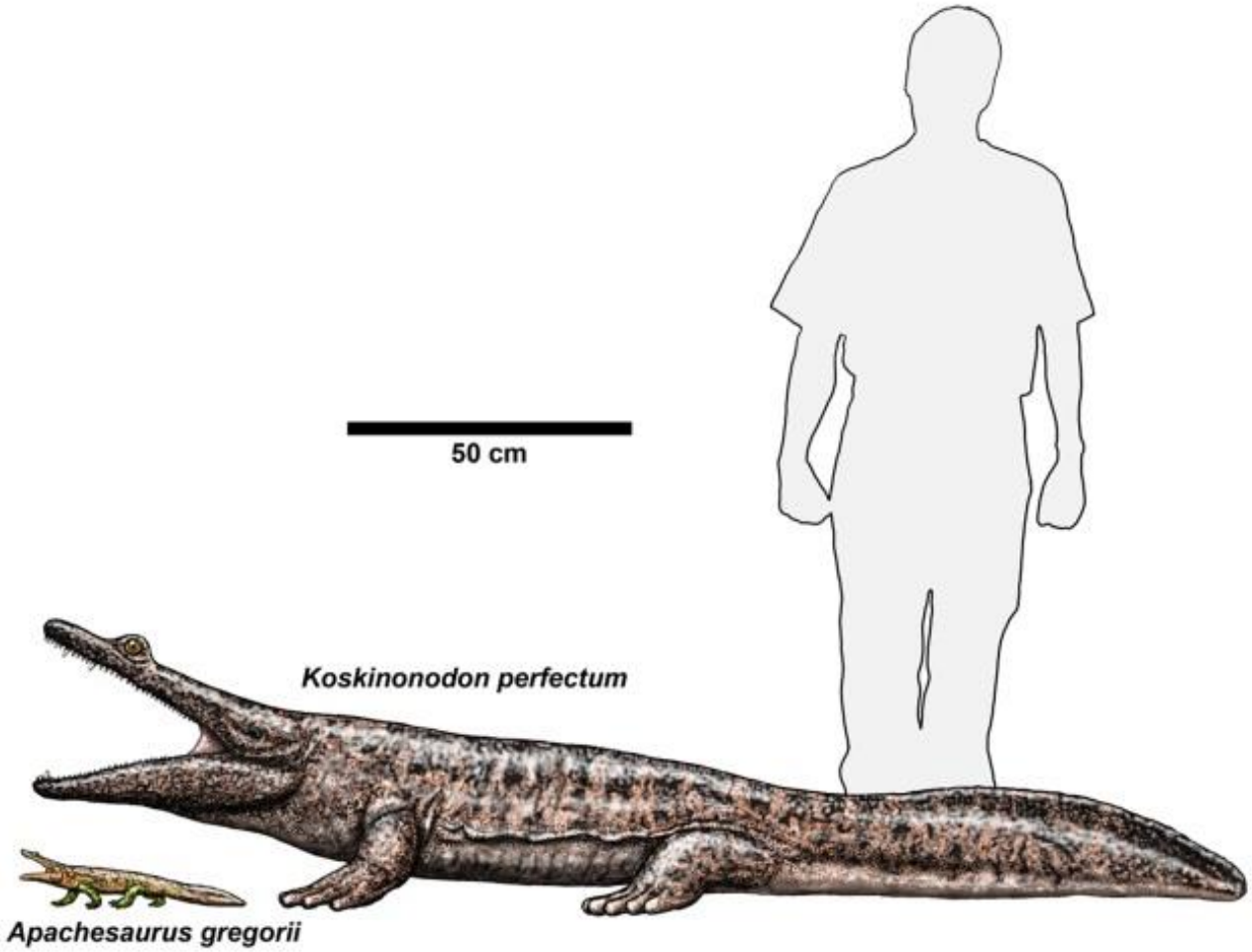
Procedure:

- As a class read through the background information and descriptions of the Triassic plants and animals below. (Can be read in turns by students or out loud by the teacher for lower grades.)
- Grades 1-2 – Draw a picture of one of the Triassic plants or animals (to the best of their ability).
- Grades 3-5 – Write a two paragraph story about one of the Triassic plants or animals which includes some of the real features of the animal from the background information. This can be a fictional or non-fictional story.

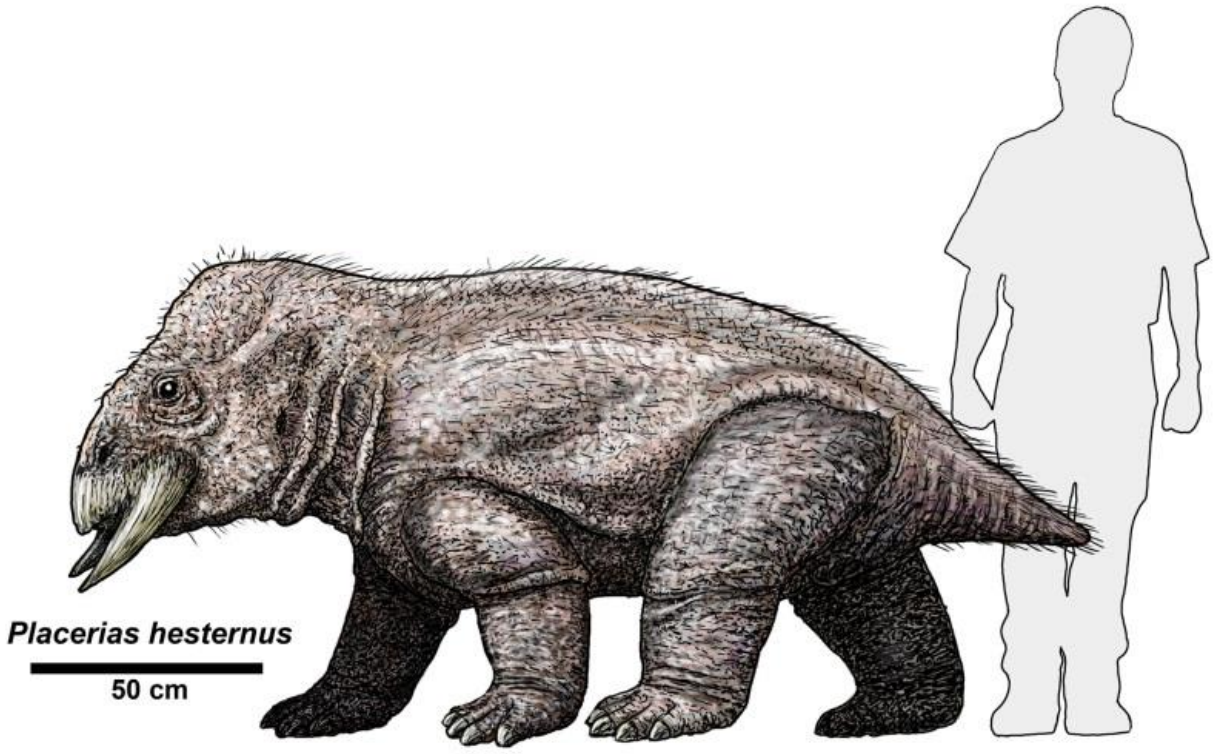
**Animals of the Triassic**

Archosauriformes (pronounced Ark-o-sore-eh-forms) are a specialized group of reptiles that includes birds and crocodiles. In the Triassic, aetosaurs (a-ee-toe-sores), phytosaurs (fye-toe-sores), rauisuchians (raw-eh-su-key-ans), and dinosaurs represented this group.

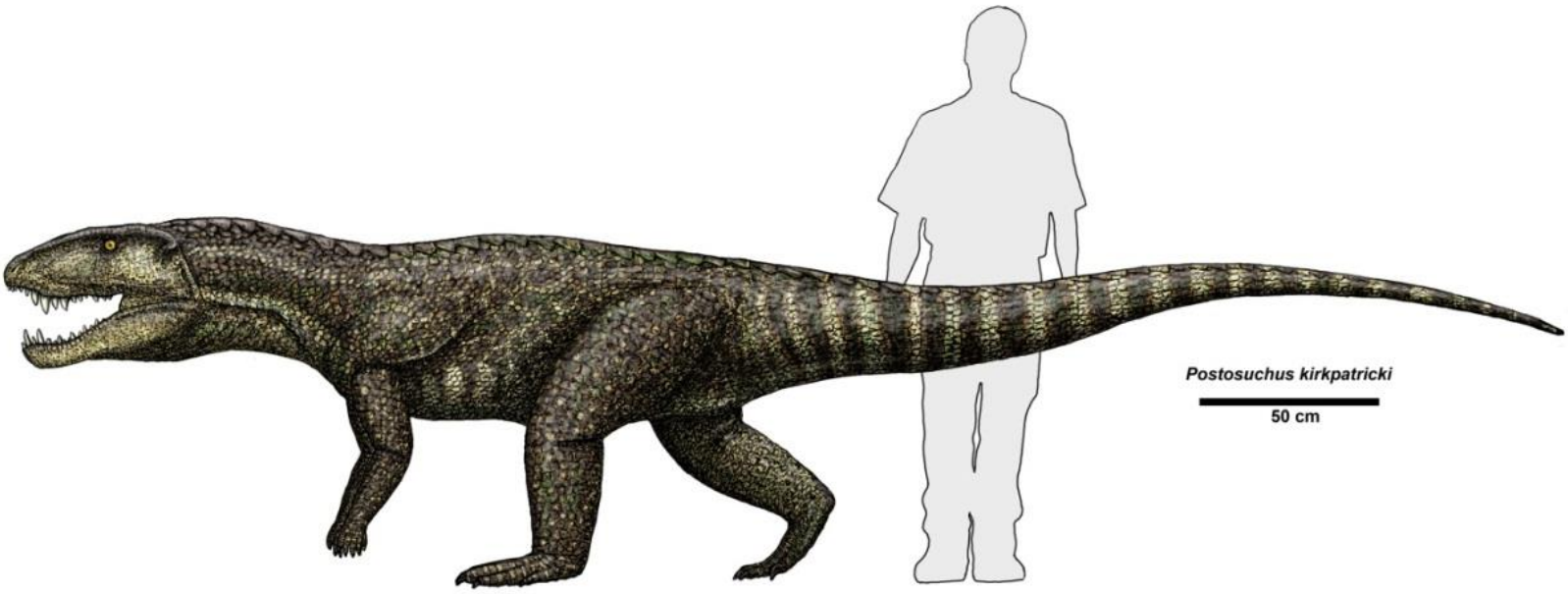
The following animals are some of the most common species that paleontologists have discovered in the fossil record at Petrified Forest.



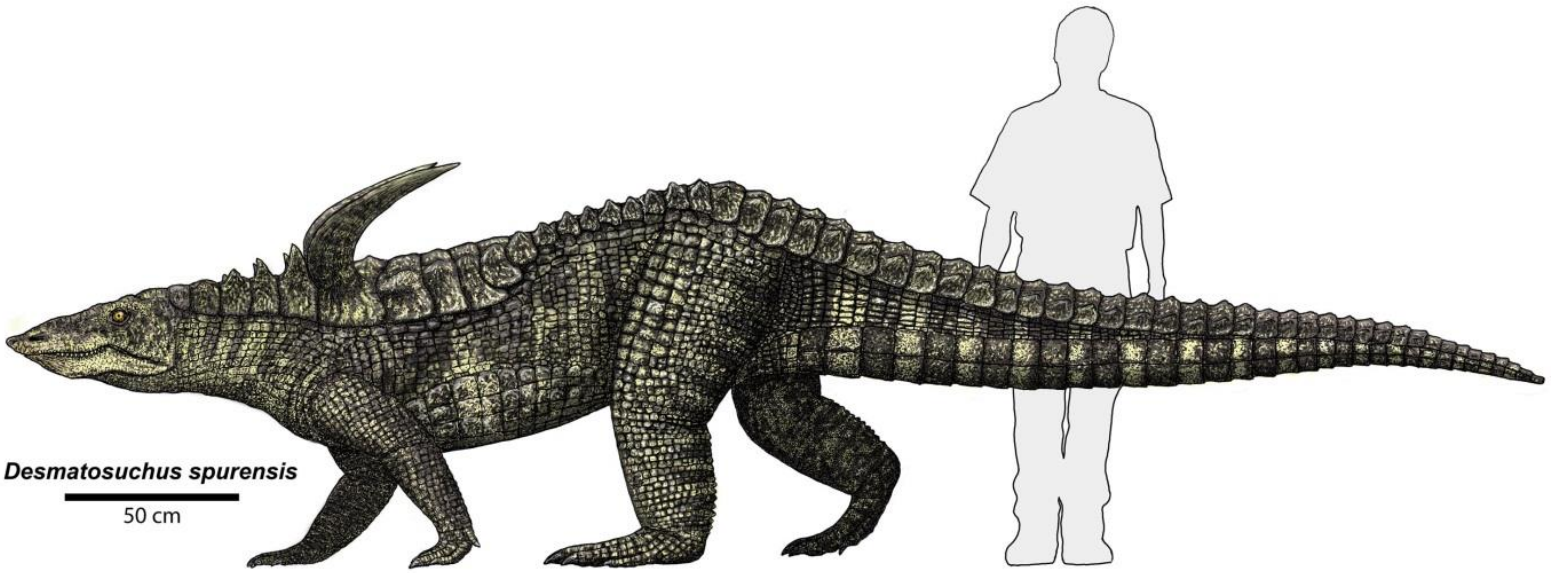

**Metoposaurs** (meh-toe-poe-sores) were giant amphibians. A common fossilized animal found in the lower portion of the park is the large flat-headed amphibian *Koskinonodon perfectus (*kosk-in-on-o-don per-fect-us). It was 10 feet (3 m) long and weighing up to 1,000 pounds. These animals were predators, mostly likely with a large appetite. They would have fed on fish and smaller animals. With their flat heads and eyes on top of their head, *Koskinonodon* probably settled in the muddy bottom of ponds and attacked prey from below. Their teeth are cone shaped and pointed.



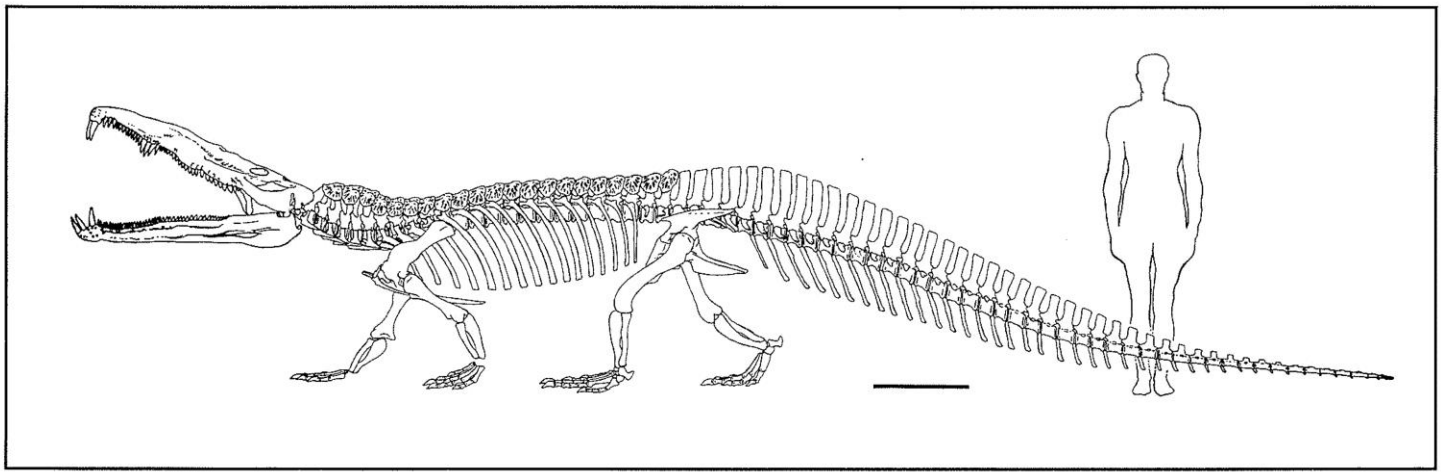

**Therapsids (Thair-app-sids)** were large reptiles that had some mammal like features such as a “cheek” bone, enlarged canine teeth, pelvis, and a specialized attachment of the skull to the spine. *Placerias hesternus* (pla-seer-ee-us) was a massive plant eater. It was up to 9 feet (2.7 m) long and might have weighed as much as 4,000 pounds. Placerias had a short neck, barrel-shaped body, small tail, and a beak-like skull with large tusk-like bones sticking out from its upper jaw. The beak-like jaws helped it pull up and tear plants and roots. Not many fossils of this animal are found inside the park. It is commonly found near the town of St. Johns, located southeast of the park, where many skeletons were found in one small area.

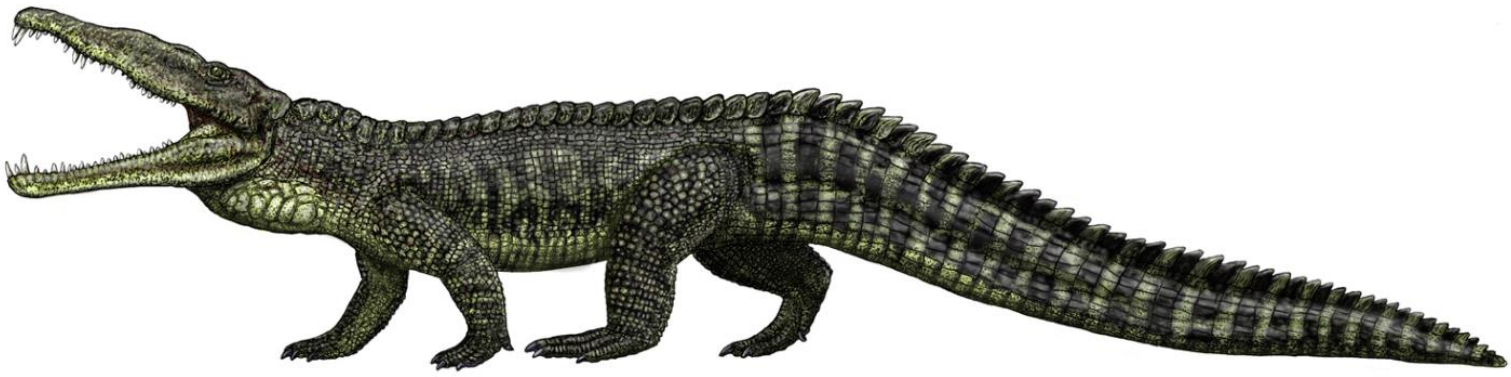



**Rauisuchians (raw-eh-su-key-ans)** were the top land dwelling predators of the Late Triassic. They had huge skulls and powerful biting jaws with 3 inch (7.6 cm) long serrated teeth. Species of rauisuchians found in the park include *Postosuchus kirkpatricki* and *Poposaurus gracilis*. Some rauisuchians could grow up to 20 feet (6 m) in length.

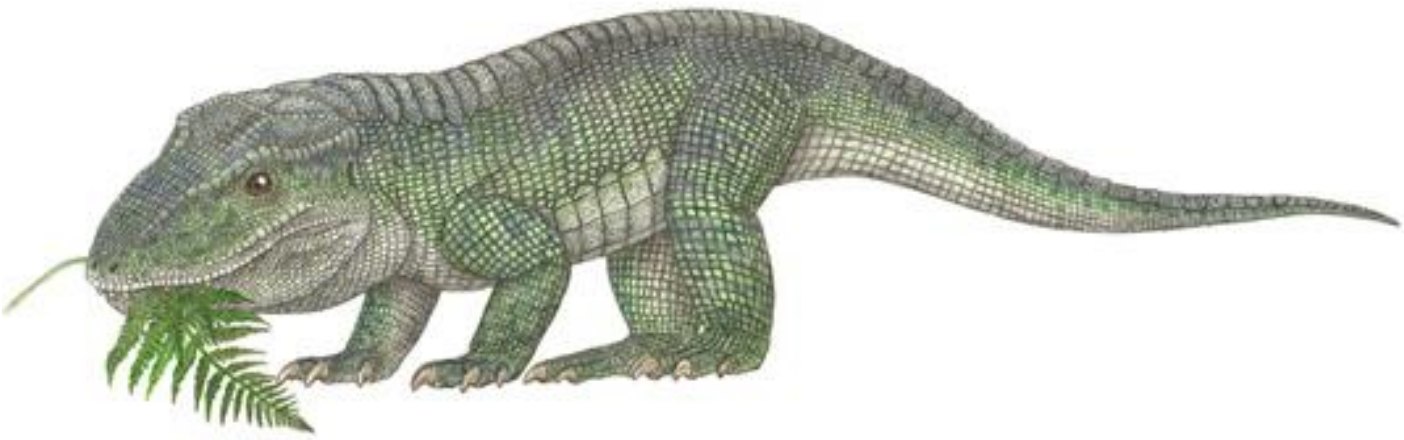



**Aetosaurs (a-ee-toe-sores)** were 3-18 feet (1-6m) long, plant eating reptiles with broad flat bodies protected by plate-like armor. Some species had large spikes on their sides or back that were possibly used for defense. Aetosaurs had short limbs and small skulls with a pig-like snout for digging out plants and roots from the ground. Three species of aetosaurs have been found in Petrified Forest National Park.

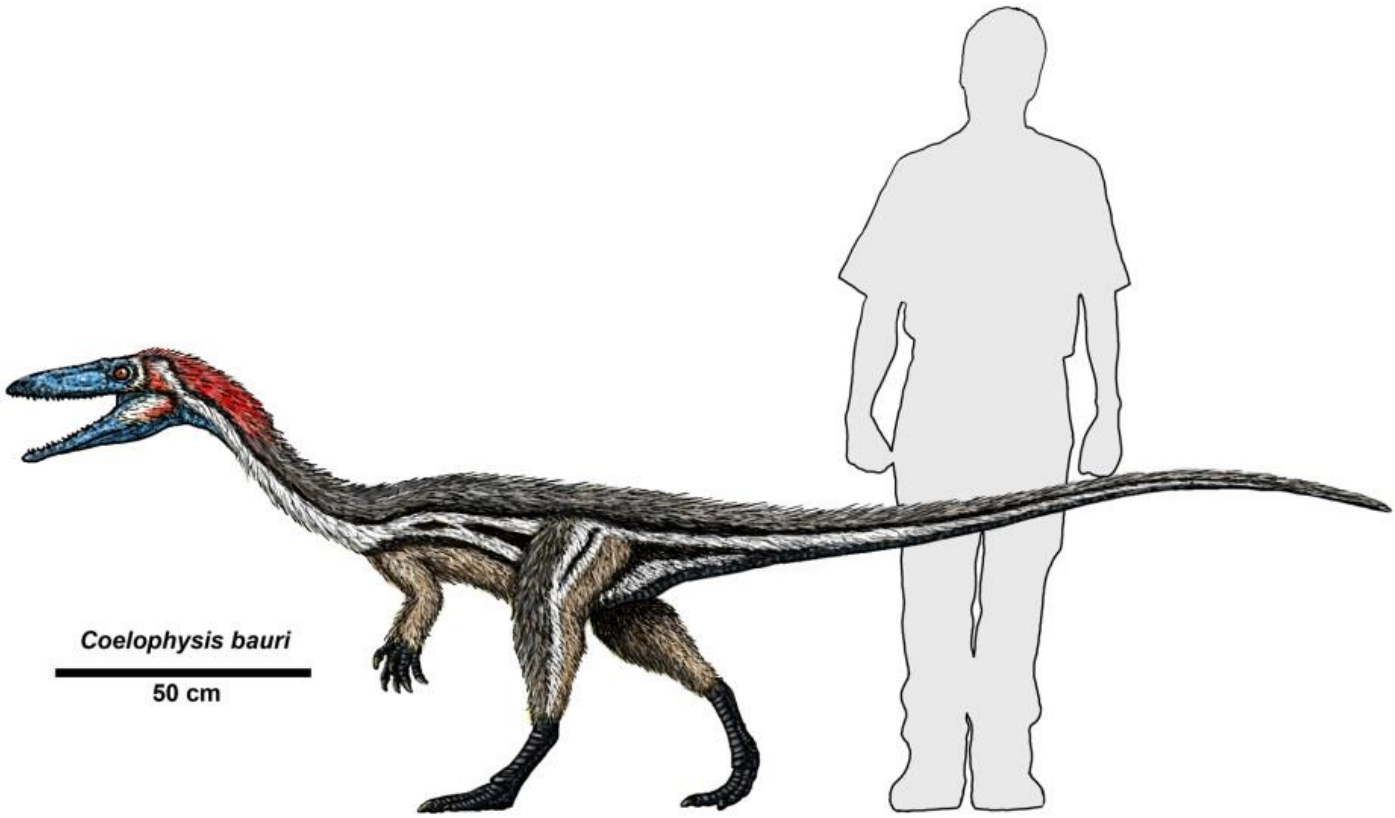




**Phytosaurs (fie-toe-sores)** were crocodile-like reptiles. Some species were possibly bigger than 20 feet (6.1 meters) long. Phytosaurs are distantly related to crocodiles and probably filled similar roles in their environment. They were predators with very large pointed teeth. They likely ate fish and any other animals that came too near to the river. Phytosaurs are the most common fossil animal found in the park. The species pictured above is *Smilosuchus gregorii*.



***Revuetosaurus callenderi*** (rev-welt-o-sore-us) was a 3foot (1 m) long, plant eating reptile that was a bit of a mystery until more fossils were found in the park. At first it was only known from distinctive leaf-shaped teeth and was thought to be an early plant eating dinosaur. In 2004 hundreds of fossil bones from this animal were found in Petrified Forest. They showed that it was not a dinosaur but instead more closely related to other Triassic reptiles like Aetosaurs and Rauisuchians.




**Dinosaurs**- Most visitors to Petrified Forest are surprised to learn that paleontologists do not find dinosaur fossils very ofte  in Triassic sediments. Dinosaurs are just a small part of the Triassic animals preserved at the park. They are different from the other animals in the archosaur group by the shape of their pelvis and ankle bones. Late Triassic dinosaurs were small, meat eating predators that walked on two legs. The example pictured above is *Coelophysis* bauri (sealo-fie-sis). It was about 8 feet (2.4 m) long and could weigh 50 pounds (23 kg). It had small sharp pointed teeth.

**Plants of the Triassic**:
Petrified Wood: Tropical Conifer Trees

The trees that were alive in what is now Petrified Forest were different species of tropical conifer trees that grew as tall as 200 ft. They may have looked similar to the giant redwood trees now living in California. They had needles and cones and thick rough bark. Twelve different species of trees have been identified in Petrified Forest but the three most common are show below. Different species are identified by a combination of how the tree looks on the outside, fossilized microscopic cell structure, and the geologic layer the tree is found in.

***Schilderia adamanica***

**(pronounced shil-dare-iah)**
**Commonly identified by the small lines coming out from the center.**

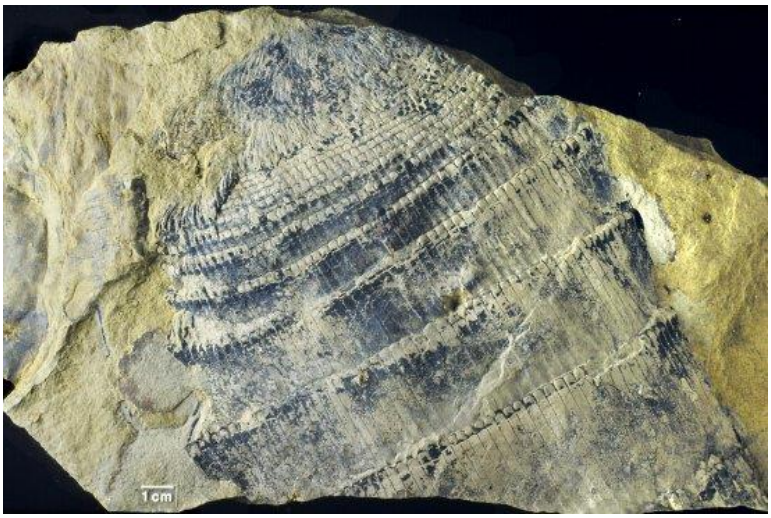
***Agathoxylon (Original name)***
**(pronounced agah-thax-elon)**
***(Araucarioxylon arizonicum)***
**(pronounced awrah-karee-axe-elon)**
**No obvious visual identification.**

***Woodworthia arizonica***
**Commonly identified by the small holes all over the outside of the fossil.**

Many other kinds of plant fossils are also found in Petrified Forest. All of the kinds below have relatives still existing today.

## Cycads; like palm trees

## Ferns





**Horsetail plants - Equisetites**

**Gingkoes; ginkgophyte**