



AUSTRALIAN DINOSAUR STORY

Student activity 3 ~ Science Interpreting ancient scenes

Palaeontologists are scientists who study fossils. Part of their job is to try and interpret what the past was like. They do this by using present day species to try to understand what happened in the past.

Scene 1

You have found an important fossil site in a river bank. There are layers of sedimentary rock containing a lot of fossils. After many months of very careful digging, collecting, and cleaning, you have produced the following pieces of evidence:

- ♦ The backbone of a medium-sized animal, made up of many separate vertebrae, each about 3-4 cm in length. Altogether, you find 20 of these from the same backbone.
- ♦ A medium-sized thigh bone that would fit the size of the animal above.
- ♦ A jaw bone. This still contains several teeth. These are wide, flat 'molar' teeth. Molars are grinding teeth.
- ♦ Several larger bones that can be pieced together to form part of a large foot. These pieces range from very small up to 5cm in length. The foot is huge! It is about 30cm wide. It has three toes, each with a long sharp claw.
- ♦ Two huge 'incisor' teeth measuring about 12cm in length are found. Incisor teeth are sharp and pointed, and used for tearing and eating flesh.
- ♦ You also find many fossils of ancient fern plants. These are preserved as imprints of the leaves and stems in mud. The leaves allow the particular species of plants to be identified.
- ♦ Some amber (remains of ancient tree sap) containing some insect fossils. The insects became trapped in the sap, and eventually became fossils.

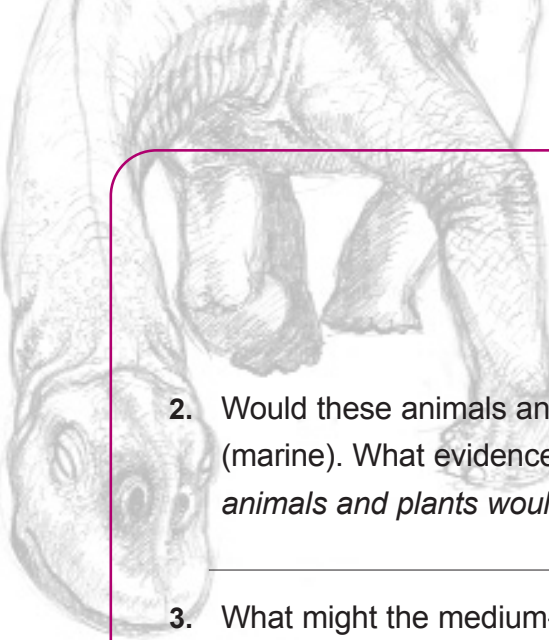
The fern fossils are identified as species that lived approximately 162 million years ago. Because all the fossils come from the same layer, we know that they must all be of the same age.

Questions

1. From which geological Period do the fossils come? (*Hint: check the Geological Time Scale to see which Period occurred 160 million years ago.*)

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2. Would these animals and plants have lived on land (terrestrial), or in the sea (marine). What evidence is there for this? (*Hint: think about where similar animals and plants would live today.*)

 3. What might the medium-sized animal have eaten? What evidence is there for this? (*Hint: think about the teeth. What kind of food would be ground up by flat molar teeth?*)

 4. What kind of animal could have left the remains of the large foot? How do you know? (*Hint: again, think about the teeth and the claws. Why would the animal have needed these?*)

 5. Why were the complete skeletons not found? What could have happened to the missing bones? (*Hint: think about what might happen to present day land dwelling animals after they die. Do they become buried without any changes?*)

Scene 2

Imagine this scene in today's Australian bush.

There is a muddy waterhole where a kangaroo goes to drink. A hawk can be seen catching a small marsupial. Another bird is eating a dragonfly. Some eucalyptus trees are growing around the waterhole, and there is grass and saltbush growing on the nearby hills.

Imagine this scene 100 million years from now.

The plants and animals have long since died, and some of their remains have fallen into the muddy waterhole. A large lake has formed over the area, and more layers of mud and sand have been deposited on top. After millions of years, these layers are compacted and eventually form layers of sedimentary rock.

Still later, the area is lifted up by earth movements, and becomes dry land. Rivers and streams eroded some of the rock away, and the rock formed from the mud in the original waterhole is uncovered.

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The Fossil Evidence

Imagine you are the scientist who discovers this site in 100 million years time. What evidence might you find in the rock layers to help you understand what the original scene was like?

(Hint: think about the kinds of fossils that are found today. Which parts of the animals might not have decayed away, and might remain as fossils. Also, think how some traces of the plants might have been left in the mud as fossils.)

Scene 3

Reconstruction

Draw a picture to show what the scene may have looked like 100 million years ago.

To help you, think about what the ancient fossil animals and plants might have looked like when they were alive. Think about the special features that the animals would need to be either herbivores (plant-eaters) or carnivores (meat-eaters). Also, think about what the ancient plants might have looked like. Did they have fronds, fruits, or flowers?

